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WHITE PINE BLISTER RUST CONTROL IN NORTHEASTERN REGION

ANNUAL REPORT FOR 1947

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# INDEX TO ANNUAL REPORT OF BLISTER RUST CONTROL

## ACTIVITIES AND ACCOMPLISHMENTS IN NORTHEASTERN REGION DURING 1947

	<u>Page</u>
FOREWORD.....	1
 I - GENERAL STATEMENT.....	 2-10
Importance of White Pine.....	2-3
Control Problem.....	4-5
Pine Infection Conditions.....	5-6
Highlights of 1947 Control Activities.....	6-7
Status of Control Area Mapping.....	7-8
Status of Ribes Eradication Work.....	8-10
 II - LEADERSHIP, COORDINATION AND TECHNICAL DIRECTION OF WHITE PINE BLISTER RUST CONTROL - WORK PROJECT BLR-1-1.....	 11-18
General Statement.....	11
Personnel.....	11-13
Informational and Service Activities.....	14-16
Cooperation With Other Government Agencies.....	17
Bond Purchases By Permanent Personnel.....	17
Financial Statement.....	18
 III - COOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATELY-OWNED LANDS - WORK PROJECT BLR-3-1.....	 19-42
General Statement.....	19
State and Local Cooperation.....	19-21
Control Area Examination and Mapping Work.....	21-23
Use of Aerial Photographs on Mapping Work.....	23-25
Ribes Eradication Work During 1947.....	26-31
Checking of 1947 Ribes Eradication Work.....	32-34
Transportation Problems.....	34-35
Injuries to Temporary Federal Employees.....	35-36
State Compensation For Cultivated Ribes Destroyed.....	36
Nursery Sanitation.....	36-37
Blister Rust Canker Elimination Work.....	37
Status of Control Work on State and Privately-Owned Lands.....	38-39
Future Control Work on State and Privately-Owned Lands.....	39-41
Financial Statements.....	41-42
 IV - BLISTER RUST CONTROL WORK ON NATIONAL FORESTS - FINANCIAL PROJECT BLR-4.....	 43-51
General Statement.....	43
Ribes Eradication Work During Calendar Year 1947.....	43-46
Expenditures During Calendar Year 1947.....	46-48
Plans For Control Work During Calendar Year 1948.....	48
Status of Ribes Eradication Work, December 31, 1947.....	49
Ribes Eradication Work, 1924-1947, Inclusive.....	50
Financial Statement.....	51

V - BLISTER RUST CONTROL WORK ON NATIONAL PARKS -	<u>Page</u>
FINANCIAL PROJECT BLR-5.....	52-55
General Statement.....	52
Ribes Eradication Work During Calendar Year 1947.....	53
Blister Rust Canker Elimination Work During 1947.....	53
Expenditures During Calendar Year 1947.....	54
Status of Ribes Eradication Work, December 31, 1947.....	54
Recommendations For Future Control Work.....	54
Ribes Eradication Work, 1929-1947, Inclusive.....	55
Blister Rust Canker Elimination Work, 1932-1947.....	55
Financial Statement.....	55
VI - APPENDIX.....	56-78



WHITE PINE BLISTER RUST CONTROL IN NORTHEASTERN REGION  
ANNUAL REPORT FOR 1947

FOREWORD

This report of 1947 blister rust control activities in the Northeastern Region is composed of five major parts and an appendix. Part I is a general statement indicating the importance of white pine, and outlining the control problem, pine infection conditions, highlights of the 1947 control accomplishments, and the current status of various phases of the control program. Activities and accomplishments under the various financial and work projects are summarized in Parts II to V, inclusive, as follows:

Work Project BLR-1-1: Leadership, Coordination and Technical Direction of All White Pine Blister Rust Control in Northeastern Region.

Work Project BLR-3-1: Cooperative Blister Rust Control on State and Privately-Owned Lands in Northeastern Region.

Financial Project BLR-4: Blister Rust Control on National Forests.

Financial Project BLR-5: Blister Rust Control on National Parks.

The appendix includes statistical summaries of accomplishments during 1947, accumulative results for all years, and detailed information on the current status of various phases of control work such as ribes eradication, control area mapping, nursery sanitation, and Ribes nigrum elimination.



## PART I

### GENERAL STATEMENT

#### Importance of White Pine

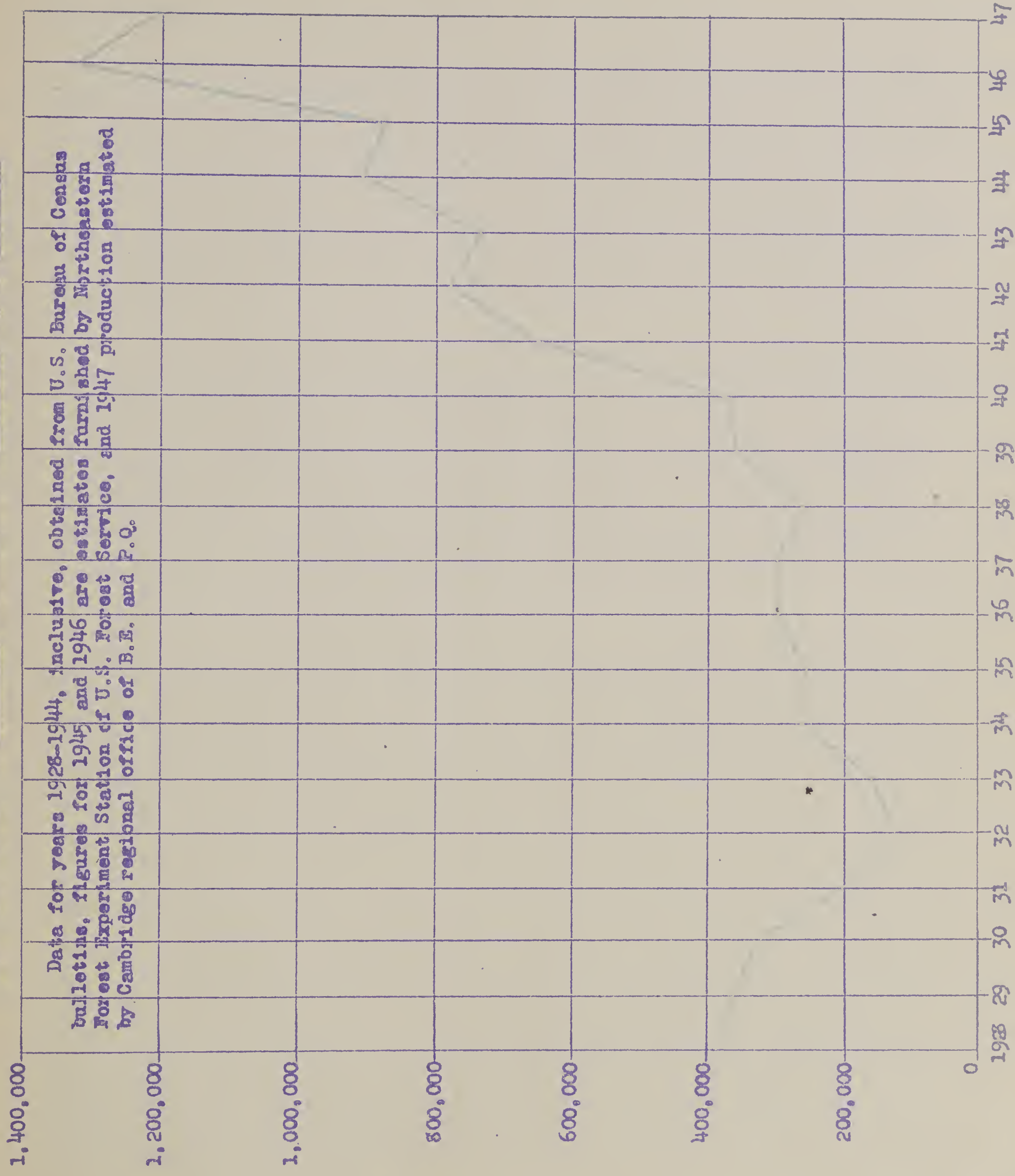
The Northeastern Region is all within the botanical range of eastern white pine, but there are extensive areas in northern and eastern Maine, western New York, most of New Jersey, and the southern third of Pennsylvania which are not included in the blister rust control area because of the scattered distribution of the pine. It is estimated that the total white pine forests in the region comprise approximately five and a quarter million acres. Over 99.8% of this is in state and private ownership.

White pine is the most important softwood timber species in the region and is also very important from a scenic and recreational viewpoint as well as for watershed protection. Millions of white pines have been planted for that purpose as well as commercial reforestation. During recent years there has also been a marked increase in white pine consumption in pulpwood cordage especially in Maine, New Hampshire and New York where old established pulp and paper companies have included this species as a source of raw material in their permanent plans. The largest operator in New Hampshire is constructing a new plant specially for conversion of white pine, while several companies in Maine are changing their practices to use large quantities. Reports also show an increase in white pine consumption by plants in northern New York State.

White pine lumber production in the Northeastern Region jumped to unprecedented heights during the past ten years to meet urgent war and post-war requirements, reaching a peak of one and a third billion board feet in 1946. Statistics are not available for 1947, but reports indicate that the production will be comparable to that of the previous year. Based on data from the U. S. Bureau of Census, the annual production of lumber during the previous ten year period (1928-1937, inclusive) averaged 270,378 M board feet. Similar reports from the Bureau of Census and the U. S. Forest Service together with our estimate for 1947 show an average of 746,605 M board feet produced annually during the past ten years. These figures are conservative since they do not include small amounts of pine cut by thousands of farmers primarily for their own use and a large volume of pine used for pulp in the manufacture of paper, wall board, etc. The following graph depicts the white pine lumber production in the Northeastern Region during the past twenty years.



WHITE PINE LUMBER PRODUCTION IN NORTHEASTERN REGION, 1928-1947, INCLUSIVE



Year





## Control Problem

Under the present program, the control area in the Northeastern Region comprises 11,924,445 acres, which includes 4,144,347 acres of white pine meeting stocking requirements based on an expectation of at least 50 crop trees per acre at maturity. There are also several hundred thousand acres of white pine which were never included in or have been discontinued from the control area for various reasons such as: insufficient stocking, poor quality, excessive cost of control, heavy blister rust infection, etc. Numerous merchantable pine stands, with little or no reproduction present or expected, have been discontinued from the control area. However, many of these stands have been cut during recent years and will revert to active control status if they restock adequately to white pine.

Good progress was made under the holding program adopted during the war period, but the work fell behind schedule in most states. The magnitude of the control problem has also been greatly increased by the white pine and ribes regrowth in areas affected by the 1938 hurricane and as a result of the extensive logging operations since that time. It is estimated that at least a million and a quarter acres in the control area have been cut over since 1938. A large proportion of these logged areas had been given protection so their reexamination will be necessary to determine the pine and ribes regeneration status. Indications are that most of these areas are restocking adequately to white pine and in many a dangerous amount of ribes regrowth has occurred. Timely action must be taken to protect this valuable young white pine. Allowing for protection zones, over three million acres are involved.

The control problem, especially in Maine, was further complicated by a series of devastating forest fires which ran rampant during the latter part of October and for a few days in November, 1947. Insignificant rainfall during September and October combined with abnormally high temperatures, defoliation of the hardwoods and debris from extensive logging operations and the hurricane created the most serious forest fire hazard ever experienced in this section of the country. Over a quarter of a million acres were burned over in New England. Of this total, approximately 220,000 acres are in Maine where 36 towns were affected and suffered an estimated property loss of over \$32,000,000. In the tragic wake of this destruction, 16 persons lost their lives, 2500 were made homeless, 9 communities were leveled or practically wiped out, and 4 others suffered extensive damage. Most of the larger fires in Maine were in the southwestern section of the state which contains some of the best white pine growth in the region. In the Bridgton blister rust control district alone, the fires burned over 99,765 acres of control area containing 53,111 acres of white pine in 14 towns. In five of these towns, from 74% to 86% of the total control area was burned over. It is estimated that there are 145 million board feet of white pine in the southwestern Maine fire areas. About 83% of the cordwood volume of pole-timber stands and 59% of the sawlog volume in saw-timber stands are in trees already dead or expected to die within a year. Salvage operations are underway, but it will be a tremendous task to complete the job in time to prevent serious insect damage.



One of the other major fires in Maine was on Mount Desert Island where hundreds of homes, including many palatial residences, were destroyed and approximately 15,622 acres of forest land burned over, including 8,600 acres in Acadia National Park. The burned sections included 45% of the total blister rust control area and contained some of the most valuable white pine on the island. Over 89% of the Acadia Park control area in the township of Bar Harbor was burned.

It will be several years before reliable information can be obtained on white pine and ribes regeneration in the burned areas. There was an exceptionally heavy crop of white pine seed throughout the region during 1947 and most of the seeds had been disseminated before the October forest fires. There is reason to believe that some of the seed survived and with the scattered islands of undamaged trees, many of the burned areas should restock adequately to white pine. For the present, they are being retained in the control area. Estimates and a survey by the U. S. Forest Service in southwestern Maine show the following damage by forest fires in New England during October, 1947:

<u>State</u>	<u>No. Fires</u>	<u>Estimated Acres Burned</u>	<u>Estimated Damage</u>
(Forestry district...	125	20,000	\$200,000.
Maine (Organized towns.....	350	200,000	32,000,000.
(Total.....	475	220,000	32,200,000.
N. H.....	232	16,000	700,000.
Vt. ....	125	1,291	8,336.
Mass. ....	328	20,000	300,000.
R. I. ....	75	600	2,500.
Conn. ....	150	1,500	7,500.
Total .....	1,385	259,391	\$33,218,336.

### Pine Infection Conditions

In the Northeastern Region, blister rust infection is generally distributed on white pines. Ribes eradication has been progressively extended within the control area over a period of many years and control of the disease has been established and maintained in those parts of the area where ribes bushes have been either eliminated or so reduced that a serious hazard no longer exists. The spread of the rust from ribes to pine has continued in unprotected areas and in those parts of the worked areas where the ribes have not been thoroughly suppressed due to unavoidable delays in scheduled reworkings and to logging and other disturbances that result in the growth of new ribes. In general, the effectiveness of ribes eradication work in controlling the disease is shown by the relative scarcity of new pine infection on the older trees and the presence of white pine reproduction free of blister rust in protected areas.

Most of the younger pines infected prior to initial control work have been killed by the rust and have disappeared from the stands. Meanwhile, damage resulting from early infection of the older and larger pines, which are killed more slowly, has become increasingly apparent. This is manifested in many stands by an increasing number of dead and dying trees in the older age classes.



6

Damage of this sort is most prevalent in Warren and Essex Counties in New York, the upper Connecticut River valley in New Hampshire and Vermont, and in many sections of Maine outside of York and Cumberland Counties. Numerous large pines with stem cankers have been salvaged during the extensive logging operations of recent years.

It is estimated that over a million and a quarter acres of white pine have been cut in the control area since 1938 and indications are that most of the affected areas are restocking adequately to white pine. In recent years, there have been many general reports concerning ribes regrowth and infection on pine reproduction in these cut-over areas. Such reports are of limited value because they do not contain facts which may be grouped and summarized for analysis of the general status of the disease on pines. During the fall of 1947, data forms and instructions were sent to all leaders outlining a procedure for a continuing survey to determine the status of blister rust infection on young pine throughout the region. The survey will be on a true sampling basis with numerous, small, random samples and wide distribution. Only thrifty trees from  $1\frac{1}{2}$ ' to 10' in height will be examined for infection on plots ranging from .1 to .5 of an acre in size. A minimum of 100 pine infection samples from each district in the first year is anticipated.

No outstanding new areas of heavy pine infection were located during 1947, but many of the leaders reported scattered areas with infection of recent origin, which indicates that the disease is still spreading wherever pine and ribes grow in close association. Although heavy infection was reported on ribes in some parts of the region during 1947, the extremely dry weather during September and October was not favorable for the spread of blister rust to pines.

#### Highlights of 1947 Control Accomplishments

The states and local cooperators continued their active support of the control program as evidenced by their expenditures amounting to \$275,136.44 during the calendar year 1947 which was an increase of approximately 40% over 1946. In New York, state and local cooperative expenditures totalled \$158,108.21 as compared with \$111,812.06 the previous year. Substantial increases also occurred in New Hampshire and Pennsylvania. The state allotment for control work in Pennsylvania was increased from \$8,000. to \$25,000. for the fiscal year 1948.

In spite of the drastic cut in federal funds for the fiscal year 1948, commendable results were accomplished on the 1947 ribes eradication work, a total of 968,351 acres being cleared of 4,057,595 ribes as a result of 55,778 man days labor. Compared with 1946, there was an increase of 12.3% in acreage worked in spite of a decrease of 14.1% in effective man days on ribes eradication. There was also a decrease of 18.7% in ribes destroyed. Greater use was made of scouts and small crews during 1947 with good production results. All of the work was on state and privately-owned lands except 8,059 acres worked on three national forests and one national park. The following table shows the total 1947 ribes eradication accomplishments by operating agencies.



Table 1 - Summary of Ribes Eradication Work During 1947

Operating Agency	Acreage Worked				Ribes Destroyed	Man Days
	First	Second	Other	Total		
Forest Service	1,513	1,368	694	3,575	27,464	346
Park Service	-	1,256	3,228	4,484	647	110
Bureau-Coop.	217,769	476,332	266,191	960,292	4,029,484	55,322
Totals	219,282	478,956	270,113	968,351	4,057,595	55,778

Excellent progress was also made on control area examination and mapping work, especially during the first four months of 1947 when federal funds were available to employ a maximum of 47 laborers and up to 37 state employees were assigned to the project. A total of 584,403 acres were mapped in detail and an additional 1,986,075 acres examined to delimit and classify control areas. Compared with 1946, these acreages represent increases of 49.7% and 74.6%, respectively. There was an increase of only 33.6% in total man days spent on such activities. The increased production was chiefly due to greater use of aerial photographs. As a result of the 1947 examination work, the total control area in the region was reduced by 257,699 acres and there was a net increase of 393,228 acres over the previous year in the total area classified as being on maintenance.

Sanitation work was performed during 1947 in the environs of 8 nurseries which were growing 33,335,000 white pines for reforestation purposes. A small amount of blister rust canker elimination work was also performed in Acadia National Park in Maine and in white pine plantations around two reservoirs in Massachusetts and New York.

#### Status of Control Area Mapping

Detail maps have been prepared for 72% of the present net control area comprising 11,924,445 acres, but many of the maps were made 10-15 years ago and will have to be checked in the field to record the changes in white pine types. It is estimated that over a million and a quarter acres of white pine in the control area have been cut during the past ten years. A large proportion of this had been mapped during the Emergency Programs. The cut-over areas are being mapped as rapidly as possible, but reliable information on pine restocking in these areas cannot be obtained for at least three years after logging operations.



All of the control area in Connecticut has been detail mapped and good progress is being made in remapping the towns in the northeastern quarter of the state which were affected by the hurricane. The initial mapping work is practically complete in Vermont, and from 87-93% complete in Maine, Rhode Island and Pennsylvania. In New York, 70% of the total control area and 81.4% in the present districts has been detail mapped. Approximately 62% of the 3,353,922 acres which has not been detail mapped in the region is located in New Hampshire and Massachusetts, where the work is 50.6% and 62.1% respectively, completed. Many of the areas which have not been detail mapped in these states were initially cleared of ribes prior to 1933 at which time spot maps were prepared to show the location of the white pine types and the boundaries of the control areas. Accurate information is not available at this time on the amount of remapping work which will be required, but it is estimated that at least half of the previously mapped areas will have to be checked to determine the changes in white pine types and the maps revised accordingly.

Table 37 in the Appendix lists information on the current status of detail mapping by states and districts.

Status of Ribes Eradication Work

The present net control area in this region comprises 11,924,445 acres of which 10,733,409 acres, or 90.0%, has been given initial protection. Second work has been performed on 5,405,237 acres or 45.3% of the net control area, and an additional 1,011,342 acres have been worked three or more times. At the end of 1947, a total of 3,696,183 acres, or 31.0% of the control area, had been classified on maintenance. The following table shows the status of the ribes eradication work by land ownership classes, while Tables 44 and 45 in the Appendix give similar information by states and districts.

Table 2 - Status of Ribes Eradication Work - December 31, 1947

Land Ownership Class	Acreage of Net Control Area	Acreage Worked			Acreage on Main- tenance	Percentage of Control Area			
		Once	Twice	Three Times		Worked			On Main- tenance
						Once	Twice	Three Times	
State & Private	11,898,776	10,708,185	5,382,124	999,026	3,673,895	90.0	45.2	8.4	30.9
National Forests	8,797	8,352	6,241	4,109	5,416	94.9	70.9	46.7	61.6
National Park	16,872	16,872	16,872	8,207	16,872	100.0	100.0	48.6	100.0
Total	11,924,445	10,733,409	5,405,237	1,011,342	3,696,183	90.0	45.3	8.5	31.0



There are 1,191,036 acres still in need of initial control work in the region. Such work has been completed in Rhode Island, Connecticut, and New Jersey, while only 32,982 acres remain in Massachusetts. In the other states, the percentages of initial work completed range from 70.4% in Vermont to 94.3% in New Hampshire. The total of 422,090 acres of initial work still to be done in New York includes 225,474 acres in the western part of the state outside the present districts. A recent general survey of control areas in western New York indicates that a sizeable acreage can be discontinued since the pine does not meet present minimum stocking requirements. The entire control area at Acadia National Park has been worked twice and is on maintenance. However, over a half of the control area on this park was burned over during October, 1947. The initial work has also been completed on two of the national forests and the remaining initial work amounting to only 445 acres on the third national forest will be performed during the spring of 1948.

Out of a total of 10,733,409 acres initially cleared of ribs, 3,696,183 acres have been placed on maintenance. The remaining 7,037,226 acres will have to be examined and any necessary rework performed before being classified as on maintenance. The district leaders estimated that a total of 5,209,013 acres were currently in need of such examination. All of the control areas in Rhode Island, Connecticut, and New Jersey are now on a maintenance basis. In the other states, the percentages range from 15.7% in New Hampshire to 59.7% in Massachusetts. The following chart shows the status of control work for each county based on the percentage of the control area in the following work classifications: initial work to be done, examination required to determine need for rework, and on maintenance.



# WHITE PINE BLISTER RUST CONTROL NORTHEASTERN REGION

STATUS DECEMBER 31, 1947

(MAP SHOWS STATUS OF CONTROL FOR EACH COUNTY BASED ON PERCENTAGE OF THE CONTROL AREA IN DIFFERENT  
WORK CLASSIFICATIONS — DOES NOT INDICATE ACTUAL LOCATION OF WORK.)



LEGEND	TOTAL AREA (ACRES)	PERCENTAGE OF EACH AREA CLASS BY STATES									
		MAINE	NH	VT	MASS	RJ	CONN	NY	NJ	PENNA.	ALL STATES
AREA REQUIRING INITIAL CONTROL WORK	1,191,036	10	6	30	2	0	0	15	0	14	10
AREA REQUIRING RE-EXAMINATION	7,037,226	66	78	49	38	0	0	58	0	63	59
AREA ON MAINTENANCE	3,696,183	24	16	21	60	100	100	27	100	23	31

TOTAL CONTROL AREA 11,924,445 ACRES

—— CONTROL AREA BOUNDARY    - - - - STATE LINE    ——— COUNTY LINE





## PART II

### LEADERSHIP, COORDINATION, AND TECHNICAL DIRECTION OF WHITE PINE BLISTER RUST CONTROL IN NORTHEASTERN REGION - WORK PROJECT BLP-1-1

#### GENERAL STATEMENT

Under Work Project BLP-1-1, the Bureau of Entomology and Plant Quarantine is responsible for the leadership, coordination, and technical direction of all blister rust control activities in the Northeastern Region which comprises the six New England States, New York, New Jersey, and Pennsylvania. These activities include cooperative work on state and privately-owned lands and projects in cooperation with the U. S. Forest Service and the National Park Service on three national forests and one national park.

The responsibilities of the Bureau in the control program for the Northeastern Region are administered by the Cambridge, Mass. regional office. Under the cooperative agreements in each state, the Bureau furnishes the services of a state blister rust control leader and such district leaders as may be agreed upon from time to time in accordance with the needs of the work and availability of funds. The district leaders give direct supervision to all control activities in their districts. Under the agreements in New Hampshire and Vermont, the district leaders spend one quarter of their total time on state forest fire control work for which a proportionate part of the total costs are paid from state funds. Each of the cooperating states furnishes the services of a responsible state employee (usually the state forester) who has nominal charge of the program and is responsible for all matters concerned with the enforcement of state laws and policies with respect to blister rust control. The states also furnish the necessary office space and other facilities for our leaders at state headquarters and cooperate with counties, towns, associations, and individuals in the local eradication of ribes.

The regional office of the Bureau provides the over-all project planning and coordinates all of the control activities into a uniform program. A detailed outline of the activities and responsibilities of this office is given on Pages 11 and 12 of our 1946 annual report.

#### Personnel

At the end of 1947, the permanent federal personnel on blister rust control in the Northeastern Region consisted of nine regional office employees, seven state leaders, 22 district leaders and one full-time clerk at the state office in Albany, N.Y. In addition, one full-time leader was employed in Rhode Island during the entire year, the state and federal governments paying his salary alternately for six-month periods. The services of this leader were terminated on December 31, 1947 and future responsibility for control activities in this state assigned to the Connecticut State Leader. The work will be supervised by the district leader located in eastern Connecticut.

During 1947 the State of New Hampshire provided the services of a full-time employee to direct control activities in the Rockingham district where, for



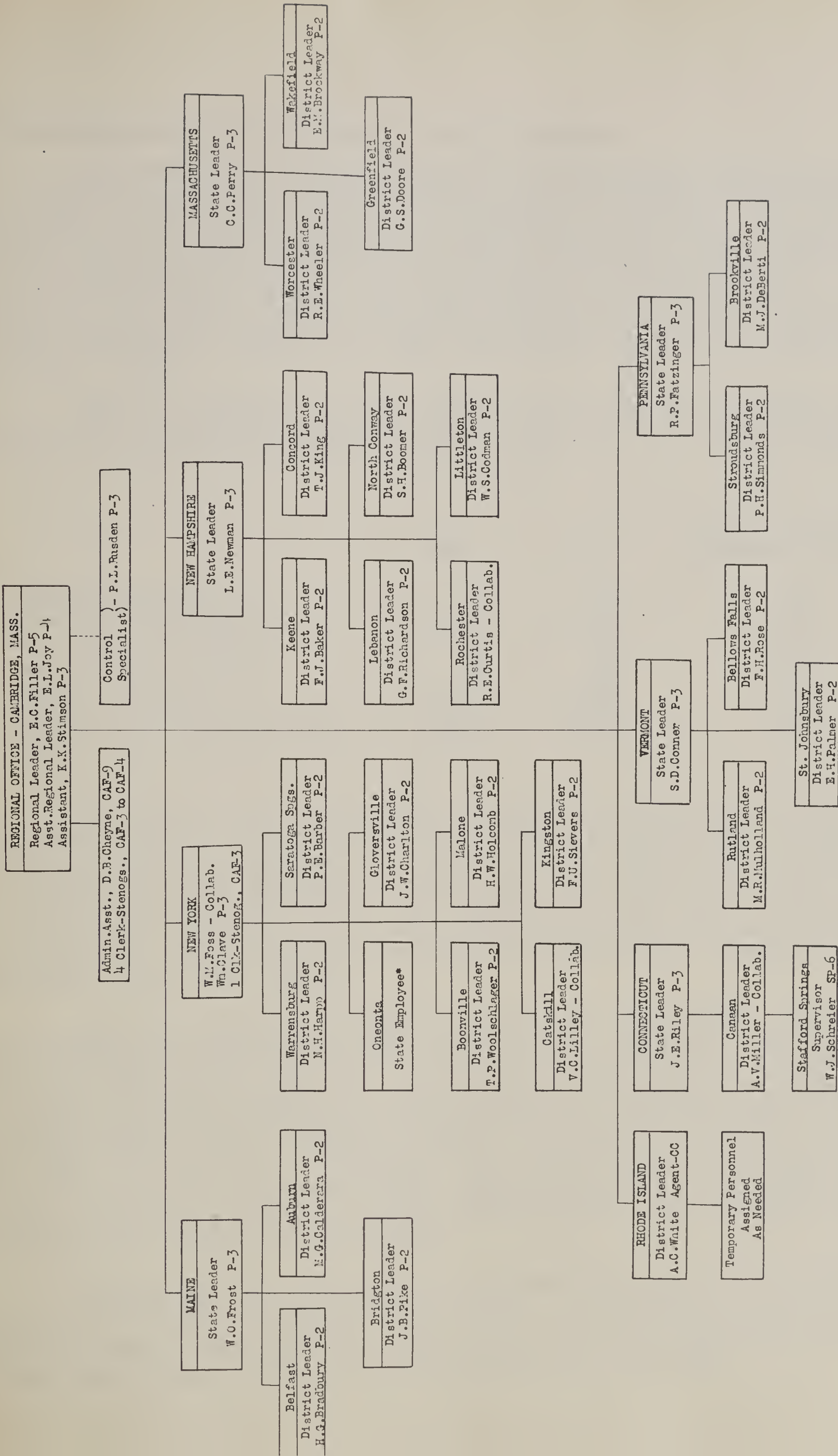
several years, the state leader has been supervising the work in addition to his regular duties. The State of Connecticut employs a full-time leader in the Litchfield County district, while in New York a state district forester directs control operations in the Oneonta district and another State Conservation Department employee had charge of the work in the Schoharie district during 1947 following federal appointment from February 10 to September 30. This change was made necessary by the reduction in appropriation.

Several changes in permanent federal personnel of the Division occurred during 1947. The first was the retirement of District Leader D. S. Curtis, of Maine, on April 30, 1947. Mr. Curtis started work on blister rust control in Maine during the spring of 1919 and had been leader in the Bridgton district since March 24, 1922. He was succeeded by Mr. J. B. Pike, Jr. who was appointed on August 11, 1946 and assigned with Mr. Curtis.

Another retirement was that of District Leader R. E. Wheeler who was headquartered at Worcester, Mass. Mr. Wheeler elected optional retirement at age 62 after 25 years' service on blister rust control work. District Leader Brockway was reassigned to supervise this district. State Leader Perry will carry the added responsibility of directing control operations in Mr. Brockway's former district.

The services of Miss Margaret H. McCourt, a war service appointee at the regional office, were terminated on October 18, 1947 to provide for a displaced career employee. This position was filled by Miss Mary Dava who was referred by the Civil Service Commission. The federal services of two SP-6 supervisors in New York and a part-time clerk at the state office in Concord, N.H. were also terminated on September 30, 1947 due to lack of funds.

The following organization chart shows the assignments of permanent personnel on blister rust control in this region during 1947.



\*State District Forester Hick gives general supervision to control activities in this district.

District Leaders in New Hampshire and Vermont spend one-quarter of their time on forest fire protection and other forestry activities.





## Informational and Service Activities of District Leaders

The success of the control program in the Northeastern Region has been due in part to the effective informational and service activities of the blister rust control leaders toward securing local cooperation in the work. This is especially true in Maine, New Hampshire, Vermont, Connecticut, and New York where town and county appropriations constitute a relatively large proportion of the total cooperative funds. However, some informational and service work is essential in all states in order to keep all cooperating agencies and the public informed regarding the status of the work, particularly the need for reworkings to maintain control.

Table 3 summarizes the 1947 informational and service activities, by states, while the following tabulation gives a comparison of the 1947 accomplishments in all states with those of the previous year:

	<u>1946</u>	<u>1947</u>	<u>% Increase or Decrease in 1947</u>
Meetings addressed.....	270	260	- 3.7
Attendance at meetings.....	21,917	19,167	-12.5
News items published.....	149	181	+21.5
Demonstrations placed.....	96	124	+29.5
Initial interviews.....	5,546	5,693	+ 2.6
Follow-up calls.....	5,268	3,619	-31.6
Persons instructed in field.....	2,819	2,710	- 3.9

There were noteworthy increases during 1947 in news items published and demonstrations placed. Experience has shown that one of the cheapest and most effective means of disseminating information is through items in local newspapers. Many excellent articles regarding the control work were published just prior to town meetings in newspapers having a wide circulation in Maine and New Hampshire. For example, the March 8th issue of the Manchester, N.H. Union had an outstanding article entitled "State Forester Urges Blister Rust Eradication - Foster Urges Support For Blister Rust Program."

All-time attendance records were set at fairs during 1947. Our leaders placed exhibits at several of the more important ones. Particular attention was given this subject in New York with the assistance of the Division of Education in the State Conservation Department, which prepared considerable new blister rust exhibit material including two three-wing panels. One of the panels includes a revolving disk on which is mounted a series of six 8x10 inch pictures. A motor turns the disk and is so regulated that a picture shows in the opening of the center panel for a ten second period. The disk then turns and another picture appears. It takes one minute to show the complete series. This panel has been most effectively used at several exhibits.

Arrangements were made for District Leader Mulholland to take charge of the large U. S. Department of Agriculture exhibit at the Rutland, Vt. State Fair during the first week of September. State Leader Conner also assisted in setting up this exhibit which was one of the chief attractions at the fair.



The leaders continued to make good use of the blister rust films at many adult meetings and in the public schools. Most of the films are now in poor condition so the new films to be released early in 1948 are urgently needed. Our supply of Miscellaneous Publication No. 22 is practically exhausted, and it is hoped that a new, revised circular will soon be available for distribution.

The following excerpt from the 1947 New York State annual report is a noteworthy example of one leader's informational activities:

"Instruction (by Mr. Clave) regarding the disease and its control was given at the New York State Ranger School at Wanakona. One full day was spent with each half of the class of 48 students. Part of the instruction was presented in the classroom and the remainder in the field. The class was transported to an area east of Cranberry Lake where cankers of recent origin were abundant. After instruction in identifying cankers and determining year of origin, each student was required to locate and give the age of at least one canker. Later the group examined a plantation on the school forest where the disease had become firmly established prior to initial eradication work in 1935. Although older cankers were numerous, students were unable to locate any infection which had originated within the past twelve years. All were impressed with the effectiveness of ribes eradication work. Eradication methods were demonstrated and each student participated in actual crew work on an area where skunk currants grew in concentrations."

As indicated in Table 3, the volume of informational and service work varied considerably in the different states. As in 1946, nearly 66% of all the meetings addressed by the district leaders were in New Hampshire, Vermont, and New York. The leaders in Maine held very few meetings and placed more emphasis on personal interviews, but compared with 1946, there was a sizeable decrease in such service work, especially in follow-up calls. Nearly 82% of all the 1947 news items were in New Hampshire and New York.



Table 3 - Summary of 1947 Informational and Service Activities of District Blister Rust Control Leaders in Northeastern Region

Informational Activities

State		Meetings Addressed		No. Items Published	No. Demonstrations Placed
		No.	Attendance		
Maine		8	172	10	19
N. H.		95	5,998	75	38
Vt.		36	1,590	17	20
Mass.		16	2,815	2	2
R. I.		4	96	-	2
Conn.		9	687	-	12
N. Y.		92	7,809	73	16
Penna.		-	-	4	15
All States		260	19,167	181	124
Average Per Leader	1947	9.3	684.5	6.5	4.4
	1946	9.6	782.7	5.3	3.4

Service Activities

State		No. Initial Interviews	No. Follow-up Calls	No. Individuals Instructed In Field
Maine		708	262	349
N. H.		1080	1426	842
Vt.		381	713	55
Mass.		1295	68	55
R. I.		58	41	3
Conn.		678	169	66
N. Y.		1340	893	986
Penna.		153	47	354
All States		5693	3619	2710
Average Per Leader	1947	203.3	129.2	96.8
	1946	198.1	188.1	100.7



### Cooperation With Other Government Agencies

At the request of the U. S. Forest Service and the New York State Conservation Department, arrangements were made to detail one of the New York district leaders to farm forestry work during the period December 1, 1946 to March 15, 1947 and again for 3½ months starting December 1, 1947. The saving in this employee's salary and expenses during the period of his detail made it possible to continue the employment of the CAF-3 clerk at the Albany Office during the entire fiscal year 1948.

Instructions were issued from the regional office to all state and district leaders concerned to cooperate in every possible way in the forest fire emergency during October, 1947. Many of these men were of great assistance. In New Hampshire, where our leaders are also district forest fire chiefs, several of the men spent from 12-20 hours per day on fire activities during the latter part of October. One of the district leaders suffered a nervous break-down and was forced to take sick leave for two weeks on doctor's orders. Another worked for days fighting forest fires in the vicinity of Rochester, N.H. until he dropped from exhaustion and had to be hospitalized, but was soon back on the job fighting fires. At the request of the Forest Commissioner in Maine, one of our district leaders spent three days assisting in the selection and instruction of forest fire coordinators in various towns in his district. Four of the district leaders in New York also participated in the supervision of fire-fighting activities during the emergency in October. Much of their time was outside official working hours.

The Division of Gypsy and Brown-Tail Moths Control continued to furnish office and garage space for one of our district leaders at Greenfield, Mass. This Division also provided winter storage for several of our trucks at their Greenfield and Wilkes-Barre garages.

Several of our leaders assisted the Office of Japanese Beetle, Gypsy and Brown-Tail Moths Inspection and Certification, especially during the Christmas tree shipping season, by inspecting and certifying small non-commercial shipments, which were brought to their offices.

The East Orange, N.J. Office of our Bureau is giving generous assistance in the reproduction of forms and manuals. This includes making 300 additional mimeographed copies of our Safety and Health Manual as well as several hundred copies of the revised blister rust control field manual. All of our basic field forms have been revised and several thousand copies of each will also be prepared at East Orange before the start of the 1948 ribes eradication season.

### Bond Purchases By Permanent Personnel

During the calendar year 1947, permanent employees of our Division purchased savings bonds under the payroll deduction plan amounting to \$10,749.01, or 6.5% of the gross payroll. This represents a decrease of only 9.2% as compared with the previous year. At the present time 23, or 59%, of the 39 permanent employees are still participating in the payroll deduction plan and allotting 5.5% of their gross salaries for bond purchases.



Table 4 - Total Expenditures and Contributed Services For Work Project BLR-1-1  
During Calendar Year 1947

State	Value of Contributed Services By States*	B.E. and P.Q. Expenditures (3101)	Total
Maine	\$300.00	\$20,283.69	\$20,583.69
N. H.	300.00	24,649.61	24,949.61
Vt.	1,438.44	16,029.21	17,467.65
Mass.	-	17,556.34	17,556.34
R. I.	322.08	962.72	1,284.80
Conn.	1,000.00**	5,430.95	6,430.95
N. Y.	3,504.00	31,469.62	34,973.62
Penna.	288.00	13,793.10	14,081.10
All States	7,152.52	130,175.24	137,327.76

\*Technical services of state employees

\*\*Includes \$200. chargeable to Project BLR-2

Table 5 - Federal 3101.14 Expenditures For Work Project BLR-1-1  
During Calendar Year 1947

State	Salaries of Appointees	L/A Expenditures	Leases	Total
Maine	19,074.52	935.17	274.00	20,283.69
N. H.	23,785.10	264.51	600.00	24,649.61
Vt.	14,754.63	1,274.58	-	16,029.21
Mass.	16,778.46	777.88	-	17,556.34
R. I.	962.72	-	-	962.72
Conn.	4,829.38	601.57	-	5,430.95
N. Y.	28,882.36	2,119.26	468.00	31,469.62
Penna.	12,882.42	766.68	144.00	13,793.10
All States	121,949.59	6,739.65	1,486.00	130,175.24

Tables 4 and 5 do not include Federal 3101 expenditures for the Cambridge, Mass. regional office totalling \$40,352.93 which consisted of \$37,923.69 for the salaries of appointees, \$2,229.24 L/A expenditures, and \$200.00 for leases. Dr. Rusden's salary and expenses for the entire year are included in the Cambridge Office expenditures.



### PART III

## COOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATELY-OWNED LANDS IN NORTHEASTERN REGION - WORK PROJECT BLR-3-1

### GENERAL STATEMENT

Over 99.8% of the white pine in the control area in the Northeastern Region is on state and privately-owned lands, chiefly farm woodlots. Cooperative control work on such lands in each of the nine states is conducted under a memorandum of understanding between the Bureau of Entomology and Plant Quarantine and the authorized state regulatory agency - usually the state forestry department. However, no control work has been performed in New Jersey since 1937 as all the important white pine areas there have been protected and are on a maintenance basis.

The present net control area on state and privately-owned lands comprises 11,898,776 acres, of which 4,138,742 acres supports white pine meeting minimum stocking requirements. At the end of 1947, initial ribes eradication work had been performed on 10,708,185 acres or 90% of the control area, 45.2% had been worked twice, and 8.4% three times. A total of 3,673,895 acres, or 30.9% of the control area is now on maintenance. Initial work is still needed on 1,190,591 acres and over 7 million acres will have to be examined and any necessary rework performed before the areas can be placed on maintenance.

The control problem in this region has been considerably changed in recent years as a result of the 1938 hurricane damage in New England and the greatly accelerated cutting of white pine in all states since that time. It is estimated that over a million and a quarter acres of white pine have been cut in the control area since 1938 but indications are that a high percentage of these cut-over areas are restocking adequately to white pine. Timely action is required to eliminate ribes regrowth in these cut-over areas and save the young pine growth from destruction by the rust.

The control problem in Maine was further complicated during October, 1947 by forest fires which burned over nearly a quarter of a million acres and destroyed thousands of acres of valuable white pine growth, especially in the southwestern portion of the state. The most serious damage occurred in the southern blister rust control district where fires burned over approximately 100,000 acres in the control area containing over 53,000 acres of white pine. A more detailed report of the 1947 forest fire damage is given on Pages 4 and 5 of this report.

### State and Local Cooperation

Under the provisions of the Lea Act, federal funds are allocated for control work on state and privately-owned lands in cooperation with states, counties, towns, associations, and individual pine owners. In Maine, New Hampshire, Massachusetts, Connecticut and New York, state funds are appropriated specifically for blister rust control, while in Vermont, Rhode Island and Pennsylvania, allotments for this purpose are made from appropriations for general forestry or pest control work. Additional funds were also



allotted from other state appropriations during 1947 in Massachusetts and New York. Total state expenditures and contributed services for Project BLR-3-1 during the calendar year 1947 amounted to \$195,595.14, an increase of 41.9% over the previous year and 208% more than in 1945. In New York, the state blister rust control appropriation was increased from \$25,000. to \$100,000. during the fiscal year 1947 and the latter amount, as well as a sizeable allotment from other forestry funds, was also made available for the fiscal year 1948. The state appropriation in New Hampshire was also increased from \$6,880. to \$12,600. during the current fiscal year, while the state allotment for control work in Pennsylvania was increased from \$8,000. to \$25,000. Such increases indicate an active interest and continued support of the control program on the part of the cooperating states.

Thirteen counties in New York appropriated \$16,325. for control work in 1947, of which \$15,631.81 was expended. One county also contributed services valued at \$1255. making a total of \$16,886.81 county cooperation as compared with \$15,366.66 during 1946.

Town cooperation is solicited in Maine, New Hampshire, Vermont, and Connecticut. During 1947, a total of 187 towns in these four states provided \$52,609.62 for cooperative ribes eradication work as compared with \$42,655.00 appropriated by 181 towns in 1946. The 1947 funds included \$4709.28 carried over from 1946 as unexpended appropriations in 27 towns and \$7,565.25 in compulsory appropriations by 22 towns under the state law in New Hampshire. As a result of the improved labor situation most of the available town money was expended during 1947. Total expenditures amounting to \$47,842.22 represented 91% of the amount available. The following table gives a summary of all town appropriations in the three northern New England States during 1947.

Table 6 - Town Appropriations in Maine, New Hampshire and Vermont During 1947

State	New Appropriations		Appropriations Carried Over From 1946		Compulsory Appropriations		Total Appropriations	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Maine	45	\$8,950.00	8	\$1200.00	-	-	53	\$10,150.00
N. H.	73	23,550.00	19 <sup>(1)</sup>	3509.28	22 <sup>(2)</sup>	\$7565.25	92	34,624.53
Vt.	29	5,900.00	-	-	-	-	29	5,900.00
Totals	147	38,400.00	27	4709.28	22	7565.25	174	50,674.53

(1) Also made new appropriations in 1947

(2) Includes 3 towns which also made voluntary appropriations



In addition to the town cooperation obtained in the three northern New England States, 13 Connecticut towns added \$1935.09 to their sinking funds in 1947 for control work as needed in the future. During the period 1940-1947, inclusive, 22 towns in this state have raised \$18,577.19 under this plan or by special appropriations. Of this total, only \$4670.84 has been expended and \$4140.86 reverted to the town treasuries, leaving a balance of \$9765.49 at the end of 1947 for future control work.

Very little individual cooperation has been solicited during recent years, but in 1947 a total of \$7,594.15 was expended by 40 cooperators, chiefly in Massachusetts, on ribes eradication work. This amount represents an increase of 64.6% over the preceding year.

As indicated in the following table, state and local cooperative expenditures and contributed services for Project BLR-3-1 have increased each year since 1941 to a peak total of \$267,918.32 in 1947. Table 58 in the Appendix lists detailed information on such expenditures and contributed services by states.

Table 7 - State and Local Cooperative Expenditures and Contributed Services For Project BLR-3-1 During Period 1942-1947, Inclusive

Calendar Year	States	Counties	Towns	Individuals	Total
1942	47,628.17	9,534.75	15,601.04	2,193.91	74,957.87
1943	50,315.35	7,552.88	17,400.82	906.56	76,175.61
1944	56,307.48	11,536.91	17,686.72	833.98	86,365.09
1945	63,509.81	12,162.14	25,039.62	360.85	101,072.42
1946	137,858.85	15,366.66	31,414.71	4,614.71	189,254.93
1947	195,595.14*	16,886.81	47,842.22	7,594.15	267,918.32
Total	551,214.80	73,040.15	154,985.13	16,504.16	795,744.24

\* In addition, \$65.60 state funds expended on Allegheny National Forest project.

#### Control Area Examination and Mapping Work

Nearly 72% of the present net control area on state and privately-owned lands in the region has been detail mapped. However, many of the maps were prepared during the Emergency Programs 10-15 years ago and now need revision due to innumerable changes resulting from the hurricane and the extensive logging since that time.



Excellent progress was made on the control area examination and mapping project during the period January-April, 1947 since Federal 3103 funds were available to employ a maximum of 47 mappers and state funds paid for 37 more. Due to the drastic reduction in the Federal 3103 allotment for the fiscal year 1948, only six mappers have been employed on such funds (in New Hampshire, Connecticut and Pennsylvania) since the close of the 1947 ribes eradication season. State money has been used in New York to retain about 20 key men on examination and mapping work during the fall and winter months, while a few state employed mappers have been provided in Rhode Island, Connecticut and Pennsylvania. No funds were available to employ any temporary workers on this work during the winter in Maine, Vermont, and Massachusetts.

As indicated in Table 8, 564,403 acres were mapped in detail during 1947 and an additional 1,986,075 acres examined to determine the present pine stocking and/or control requirements. Compared with 1946, these accomplishments represent increases of 49.7% in acreage mapped and 74.6% in acreage examined. These increases were largely the result of an increase of 33.6% in man days expended on this work.

The 1947 examination and mapping work resulted in a net reduction of 259,181 acres in the control area on state and privately-owned lands in the region, but the white pine acreage was reduced by only 43,661 acres. Results from this type of work during recent years show that in spite of the extensive cutting of merchantable timber there is very little change in total white pine acreage for most of the cut-over areas and abandoned farm lands are restocking to white pine, many previously understocked areas are now fully stocked and thousands of acres are being planted to this species each year. This is illustrated by the results of detail mapping during 1946 and 1947 in the towns of Harrison, Otisfield and Bridgton, Maine where the white pine acreage in the control area has increased from 26,092 to 35,130 acres. On the other hand, the total control area in this region is being reduced by cutting the original protection zone widths and by discontinuing numerous small scattered stands of white pine which required relatively large protection zones.



Table 8 - Results of Control Area Examination and Mapping Work - 1947

State	Work Performed By	Acreage Detail Mapped			Additional Acreage Examined But Not Mapped			Total Man Day
		Initial Mapping	Re-Mapping	Total	Inside Control Area	Outside Control Area	Total	
Maine	Dist. Leaders	2,896	-	2,896	7,510	644	8,154	1
	Temp. Employees	56,744	39,677	96,421	-	73,948	73,948	52
	Total	59,640	39,677	99,317	7,510	74,592	82,102	54
N. H.	Temp. Employees Only	153,344	13,256	166,600	76,350	123,893	200,243	1,40
Vt.	Dist. Leaders	470	442	912	20,885	3,117	24,002	4
	Temp. Employees	9,619	6,973	16,592	79,285	17,685	96,970	40
	Total	10,089	7,415	17,504	100,170	20,802	120,972	44
Mass.	Temp. Employees Only	30,885	60,350	91,235	10,739	51,017	61,756	35
R. I.	"	-	20,412	20,412	50,244	-	50,244	15
Conn.	"	-	22,838	22,838	-	63,562	63,562	32
N. Y.	Dist. Leaders	410	450	860	41,345	7,815	49,160	12
	Temp. Employees	64,672	46,030	110,702	592,853	648,647	1,241,500	5,56
	Total	65,082	46,480	111,562	634,198	656,462	1,290,660	5,68
Penna.	Temp. Employees Only	10,081	44,854	54,935	102,304	14,232	116,536	21
All States	Dist. Leaders	3,776	892	4,668	69,740	11,576	81,316	17
	Temp. Employees	325,345	254,390	579,735	911,775	992,984	1,904,759	8,93
	Total	329,121	255,282	584,403	981,515	1,004,560	1,986,075	9,11

Use of Aerial Photographs on Mapping Work

A standardized regional procedure for timber type mapping directly on 4-inch scale aerial photographs was developed in the fall of 1946. It was put in effect immediately for all mapping for which aerial photographs were on hand. In addition, aerial photographs for other sections of the region in order of their priority on the working schedule were ordered. Through 1947 a total of 6,127 photographs have been purchased or are on order. The extent of coverage provided by these is shown on the accompanying map.

A survey of the mapping progress in 21 districts during the first year aerial photographs were used (Nov. 1946-Oct. 1947) shows a total of nearly 227,000 acres mapped on photographs. The rate of production per man day ranged from 86 to 383 acres with an average of 156 acres. In these same districts, mapping by the compass and pacing method on areas for which aerial photographs were not available totalled about 127,000 acres for the same period. The production per man day for this varied from 37 to 178 acres per man day with an average of 79 acres. On the basis of these results, which include all training work required to initiate the new procedure, the mapping on aerial photographs has resulted in an average production rate nearly double that of the former system. A further fact of outstanding significance is that most of the leaders



appraise the new mapping techniques and results as definitely more satisfactory than the old. A point on which general dissatisfaction was expressed is the quality of photostatic reproductions of the finished maps that were provided. Since this is due chiefly to faulty reproduction techniques which can be corrected, satisfactory reproductions can be provided.

A modified procedure using aerial photographs only as an aid in mapping has been developed in New Hampshire. In general outline the steps in this are as follows:

1. Outlining the road block or other unit to be mapped, on cross section paper, scale 6 inches to the mile, by enlargement from the U.S.G.S. Quadrangle or other accurate base map.
2. Interpretation and delineation of types on the photograph.
3. Transfer of the type boundaries and other pertinent features to the outline map. In this step the errors in area due to photographic distortion are corrected.
4. Field check of the unit for verification of the types, boundaries and features shown.

Experimental mapping work using this procedure was done on 14,356 acres in four districts. The rate of production by districts ranged from 114 to 204 acres per man day with an average of 149. This compares favorably with the rate of 156 acres per man day mapping directly on the photographs. Exploratory work using this modified procedure is being continued in New Hampshire and will be extended to other states.

The possibility of using a stereoscopic device for direct timber type mapping in the office through interpretation of the photographs was investigated to the extent of making a few test maps with the Harvard Forest School multiscope and field checking some of the areas. The results were very satisfactory insofar as delineation of type boundaries and mapping of physical features is concerned. The accurate interpretation of types, however, is a highly specialized field which requires intensive study of the significance of tone shading and pattern on the photograph. This plus the fact that intensive use of the eyes would limit the time an operator could use the instrument, would necessitate concentration of all the basic interpretation and typing work under two or three specially trained men. This is not practicable at present. However, further consideration will be given to this and other means of facilitating the mapping work.

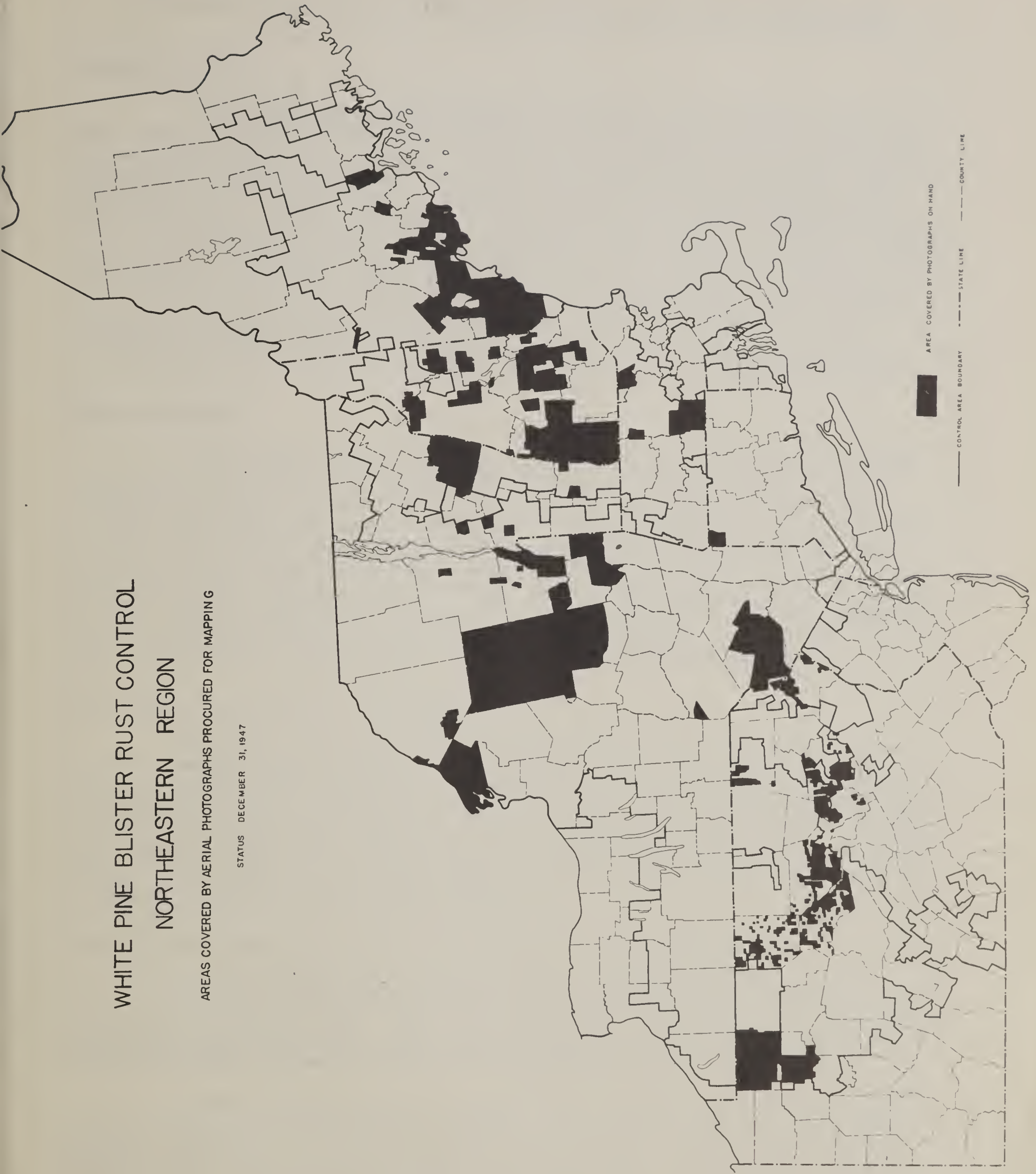




# WHITE PINE BLISTER RUST CONTROL NORTHEASTERN REGION

AREAS COVERED BY AERIAL PHOTOGRAPHS PROCURED FOR MAPPING

STATUS DECEMBER 31, 1947







## RIBES ERADICATION WORK ON STATE AND PRIVATELY-OWNED LANDS DURING 1947

### Weather Conditions

The Massachusetts State Leader, who has kept phenological records for many years, reported that the spring of 1947 was within from two to four days of the latest season in 15 years. Ribes foliage developed very slowly making it impossible to start eradication work until May 12th in most districts. Considerable rainy weather occurred in May with official records of the Boston U.S. Weather Bureau Office showing precipitation on 16 days. June was slightly cooler with rainfall somewhat less than normal, while July was hotter and dryer than normal, the warmest since 1911. There were numerous hot, humid days in August and below normal precipitation. Conditions were ideal for field work during September and in the southern part of the region it was not until September 23 that frosts caused serious defoliation of the bushes. However, due to the reduction in funds, relatively few men could be employed that month.

### Labor Conditions

On the whole, labor conditions were better than in 1946, but in some localities, especially in the vicinity of larger towns and cities, it was difficult to obtain workers even at the increased wage rates of 80 cents, 90 cents, and \$1.00 per hour. The turn-over was considerable and the quality of many of the workers was inferior. Dissatisfaction with wage rates, high cost of lodging and board, lost time due to inclement weather, and the relatively short term of employment (May to September) were the chief reasons for men seeking employment elsewhere. In many districts it was not possible to fill the crews until high school boys were available during the latter part of June. About half of the men employed were veterans of World War II.

### Wage Rates For Temporary Federal Personnel

The hourly wage rates paid seasonal employees on Federal funds were 80 cents for crew men, 90 cents for crew leaders, and \$1.00 for foremen and scouts. The 1947 wage rates were comparable to prevailing local rates on work of a similar nature. However, men on control work lost considerable time due to inclement weather and even on the basis of full-time employment, the average "take home" pay for crew workers was less than \$30. per week. Transient crews had extremely small net earnings after paying for board and room at the high prevailing rates for these accommodations.

### Temporary Personnel Employed on Ribes Eradication Work During 1947

A maximum of 906 temporary workers were employed by all agencies on ribes eradication work under Project BLR-3-1 during the 1947 season as compared with 983 the previous year. This number represents peak employment during a single bi-weekly pay period which was June 15-28, 1947 in most states.

A total of 945 laborers were paid from Federal 3103 funds for varying periods during the 1947 season as compared with 1260 in 1946 and 622 in 1945. However, the maximum number of federal workers during a single pay period in 1947 was 663. The difference between the total number of temporary employees



(945) and the peak number for a single pay period (663) does not represent the actual turn-over since many were transferred to state or local funds.

Table 9 - Temporary Personnel Employed on Ribes Eradication Work in 1947  
(Work on State and Private Lands Only)

State	Maximum Number of Crew Men, Crew Leaders, Scouts and Foremen Employed By All Cooperating Agencies	Employees Paid From Federal 3103 L/A Funds		
		Maximum Number*	Total Number**	Period of Peak Employment
Maine	132	124	188	June 15-26
N. H.	199	198	242	"
Vt.	80	80	122	"
Mass.	50	30	44	July 13-26
R. I.	4	2	2	All season
Conn.	20	13	16	June 15-26
N. Y.	355	156	254	July 13-26
Penna.	66	60	77	June 15-26
All States	906	663	945	-

\*Peak employment during a single bi-weekly period

\*\*Regardless of length of time employed

#### Results of 1947 Ribes Eradication Work on State and Private Lands

A total of 960,292 acres of state and privately-owned lands were cleared of 4,029,484 ribes during 1947 as a result of 55,322 man days labor. The total acreage covered consisted of 217,769 acres of initial work, 476,332 acres of second work, and 266,191 acres of other workings. Based on regional totals, there was an increase over 1946 of 12.1% in acreage worked in spite of a decrease of 14.2% in man days labor. There was also a decrease of 18.9% in the number of ribes destroyed since a large proportion of the 1947 acreage was second and other workings. A special effort was made to complete areas in need of initial work, but this is not always possible in those states where the program location is dependent on the availability of local cooperation, such as town appropriations. However, noteworthy progress was made in Vermont during 1947 when first workings comprised over 54% of the total acreage cleared of ribes. In the other five states where initial work is incomplete, such percentages ranged from 15.2% in Maine to 37.0% in Pennsylvania. Preference was also given in all states to rework on disturbed areas which are restocking to white pine.



Table 10 - Ribes Eradication Work on State and Private Land During 1947First Work

State	Total Acreage Worked	% Total For Each State	Average Acreage Worked Per District In Each State	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
				Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	24,168	11.1	8,056	113,867	38	993	4.7	.04	24.3
N. H.	26,049	12.0	4,342	202,424	-	2,724	7.8	.10	9.6
Vt.	37,951	17.4	12,651	224,614	36	2,431	5.9	.06	15.6
Mass.	25,026	11.5	8,342	67,548	1,015	1,214	2.7	.05	20.6
N. Y.	80,911	37.1	10,113	884,031	1,633	8,252	10.9	.10	9.8
Penna.	23,664	10.9	7,888	212,398	433	2,578	9.0	.11	9.2
All States	217,769	100.0	8,376	1,704,932	3,155	18,192	7.8	.08	12.0

Second Work

Maine	112,637	23.6	37,546	389,381	3,905	4,780	3.5	.04	23.6
N. H.	68,311	14.3	11,385	277,066	81	5,239	4.1	.08	13.0
Vt.	28,765	6.0	9,588	117,892	88	1,741	4.1	.06	16.5
Mass.	43,154	9.1	14,385	113,051	368	2,580	2.6	.06	16.7
R. I.	5,221	1.1	5,221	2,712	74	153	0.5	.03	34.1
Conn.	184	0.1	92	158	-	4	0.9	.02	46.0
N. Y.	192,406	40.4	24,051	731,749	593	9,512	3.8	.05	20.2
Penna.	25,654	5.4	8,551	133,128	555	1,945	5.2	.08	13.2
All States	476,332	100.0	16,425	1,765,137	5,664	25,954	3.7	.05	18.4

Other Workings

Maine	21,983	8.3	7,327	26,957	4	572	1.2	.03	38.4
N. H.	13,790	5.2	2,298	87,065	15	1,443	6.3	.10	9.6
Vt.	2,974	1.1	992	13,483	-	209	4.5	.07	14.2
Mass.	3,883	1.4	1,294	28,552	319	271	7.4	.07	14.3
R. I.	15,191	5.7	15,191	2,281	92	262	0.15	.02	58.0
Conn.	28,118	10.6	14,059	65,013	-	864	2.3	.03	32.5
N. Y.	165,670	62.2	20,709	317,067	120	6,557	1.9	.04	25.3
Penna.	14,582	5.5	4,861	18,997	400	998	1.3	.07	14.6
All States	266,191	100.0	9,179	559,415	950	11,176	2.1	.04	23.8



Table 10 (Continued) - Ribes Eradication Work on State and Private Lands During 1947  
All Work

State	Total Acreage Worked	% Total For Each State	Average Acreage Worked Per District In Each State	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
				Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	158,788	16.5	52,929	530,205	3,947	6,345	3.3	.04	25.0
N. H.	108,150	11.3	18,025	566,555	96	9,406	5.2	.09	11.5
Vt.	69,690	7.3	23,230	355,989	124	4,331	5.1	.06	15.9
Mass.	72,063	7.5	24,021	209,151	1,702	4,065	2.9	.06	17.7
R. I.	20,412	2.1	20,412	4,993	166	415	0.2	.02	49.2
Conn.	28,302	2.9	14,151	65,171	-	868	2.3	.03	32.6
N. Y.	438,987	45.7	54,873	1,932,897	2,346	24,321	4.4	.06	18.0
Penna.	63,900	6.7	21,300	364,523	1,388	5,521	5.7	.09	11.6
All States	960,292	100.0	33,114	4,029,484	9,769	55,322	4.2	.06	17.4

Nearly 46% of the total acreage cleared of ribes in the region during 1947 was in New York where increased state appropriations and effective administration are reflected by excellent progress in all phases of the control program. Of other regional totals, New York accounted for 45.0% of the ribes destroyed, 43.8% of the effective eradication man days, and 44.6% of the total BLR-3-1 expenditures. Maine was second in production with 16.5% of the total acreage worked, but had only 11.5% of the effective man days. In addition to these state totals, average acreage worked per district in Maine and New York greatly exceeded the averages in the other states. A large volume of scout work was responsible for the results in Maine, while the New York accomplishments were greatly influenced by two districts where a total of 229,922 acres were worked. This acreage represents 52.4% of the total for the state and 23.9% of all the work in the region.

A regional average of only 4.2 ribes per acre were destroyed during the 1947 work as compared with 5.8 in 1946. The state averages for 1947 ranged from 0.2 of a bush per acre in Rhode Island to 5.7 bushes in Pennsylvania. An average of 7.5 bushes per acre were destroyed by first workings, 3.7 bushes per acre by second workings, and 2.1 during other workings. Similar relative per acre values prevailed in the respective states except in New Hampshire, Connecticut and Massachusetts where the average ribes for other workings were greater in number than for second workings. These figures only emphasize the fact that in areas generally light in ribes, a relatively few acres with greater populations may cause distortion of results. These conditions are encountered frequently where inadequate funds have made necessary a delay in the reworking.

The production rate for all work jumped from 13.3 acres per man day in 1946 to 17.4 acres in 1947, or an increase of 30.8%. Increases occurred in all states except Connecticut where the rate dropped from 37.8 acres in 1946 to 32.6 acres in 1947. New Hampshire, Vermont, and Pennsylvania were below the average



for all states, but in each of these three the ribes per acre exceeded the average for all states.

The man days charged to ribes eradication include leave granted seasonal workers. During 1947 this leave amounted to 17,409 man hours or 7.4% of the total federal hours charged to ribes eradication as compared with 18,500 man hours and 5.3% in 1946. Leave for temporary Federal L/A workers during the entire calendar year amounted to 21,470 man hours or 7.9% of their total time. At an average of 85 cents per hour, this entailed a cost of \$18,250.

#### Ribes Eradication Work on Maintenance Areas

During the past two years, a separate record has been kept of the ribes eradication work on areas which had previously been placed on maintenance. The results of this maintenance work during 1947 are summarized in the following table.

Table 11 - Ribes Eradication Work on Maintenance Areas During 1947

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	Second	3,364	1,825	-	71	0.5	.02	47.4
R. I.	Second	5,221	2,712	74	153	0.5	.03	34.1
	Other	15,191	2,281	92	262	0.15	.02	58.0
	Total	20,412	4,993	166	415	0.2	.02	49.2
Conn.	Second	184	158	-	4	0.9	.02	46.0
	Other	28,118	65,013	-	864	2.3	.03	32.5
	Total	28,302	65,171	-	868	2.3	.03	32.6
N. Y.	Second	3,270	3,503	9	104	1.1	.03	31.4
	Other	32,358	44,867	14	1,203	1.4	.04	26.9
	Total	35,628	48,370	23	1,307	1.4	.04	27.3
Penna.	Second	1,103	5,865	-	114	5.3	.10	9.7
	Other	416	1,305	-	34	3.1	.08	12.2
	Total	1,519	7,170	-	148	4.7	.10	10.3
All States	Second	13,142	14,066	83	446	1.1	.034	29.5
	Other	76,083	113,466	106	2,363	1.5	.031	32.2
	Total	89,225	127,532	189	2,809	1.4	.0314	31.6



The 89,225 acres of maintenance work comprised 9.3% of all eradication work on state and private lands during 1947. In Rhode Island and Connecticut all work was on maintenance areas. The average for all maintenance work in the region was only 1.4 ribes per acre. In Pennsylvania, however, the ribes per acre were approximately the same for both maintenance work and other reworkings.

The average regional production rate for maintenance workings was 31.8 acres per man day. Within the states the rates ranged from a minimum of 9.7 acres in Pennsylvania to 58.0 acres in Rhode Island. Most of this work was performed by scouts.

#### Comparison of Results of 1946 and 1947 Ribes Eradication Work

A comparison of the results of the 1947 and 1946 eradication work on state and privately-owned lands in the various states shows an increase in the worked acreage in five of the eight states, with decreases in man days employment in all states, except Massachusetts. Four states also had increases in total number of ribes destroyed. The most noteworthy percentage increases in acreage worked occurred in Vermont - 91.2%, and Rhode Island - 62.6%, which also had decreases of 5.1% and 3.5%, respectively, in man days employment. Even with a drop of nearly 28% in employment, the acreage worked in Maine during 1947 was only 2.0% less than in 1946. In New Hampshire, a third more acreage was covered with 6.6% less man days, while New York had an acreage increase of nearly 11% in spite of a decrease of about 18% in worker time. The small decrease of 4.4% in acreage worked in Massachusetts was due primarily to the large increase of 65.5% in ribes destroyed. The heavier ribes population resulted chiefly from eradication on watershed areas worked in cooperation with the Metropolitan District Commission. There was also some increase in number of ribes destroyed in Connecticut, where the drop in acreage was about comparable to the decrease in employment. Table 12 gives detailed information on the 1946 and 1947 accomplishments in each state and shows the percentage of increase or decrease for the current year.

Table 12 - Comparison of Results of 1946 and 1947 Ribes Eradication Work on State and Private Lands

State	Total Acreage Worked			No. Ribes Destroyed			Man Days Employment		
	1946	1947	% Increase or Decrease in 1947	1946	1947	% Increase or Decrease in 1947	1946	1947	% Increase or Decrease in 1947
Maine	161,989	158,788	- 2.0	956,737	530,205	- 44.6	8,769	6,345	- 27.6
N. H.	81,336	108,150	+33.0	705,515	566,555	- 19.7	10,076	9,406	- 6.6
Vt.	36,453	69,690	+91.2	341,768	355,989	+ 4.2	4,617	4,381	- 5.1
Mass.	75,361	72,063	- 4.4	126,347	209,151	+ 65.5	3,743	4,065	+ 8.6
R. I.	12,555	20,412	+62.6	3,568	4,993	+ 39.9	430	415	- 3.5
Conn.	45,643	28,302	-38.0	38,893	65,171	+ 67.6	1,209	868	- 28.2
N. Y.	396,548	438,987	+10.7	2,365,321	1,932,897	- 18.3	29,565	24,321	- 17.7
Penna.	46,963	63,900	+36.1	430,551	364,523	- 15.3	6,096	5,521	- 9.4
All States	856,848	960,292	+12.1	4,968,700	4,029,484	- 18.9	64,505	55,322	- 14.2



## Checking of 1947 Ribes Eradication Work

The methods of checking the efficiency of ribes eradication work in this region are as follows: (1) checking by foremen working behind the crews, (2) checks made by crews reworking portions of strips, (3) supervisory inspections of crews at work, and (4) measured general checks in completed areas.

When the crew formation method is used, the foreman usually works from 15-25 feet in back of the line, following a zigzag course, and checking the work of each man. No separate record is kept of the ribes pulled by the foremen.

When working in areas where ribes are quite abundant, the crews check their efficiency by occasionally reworking a portion of a strip and keeping data on the ribes found on each working. By this means a crew has the opportunity to determine the efficiency of their own work. The foreman keeps a record of such checks and reports are furnished the district and state offices.

Supervisory inspections of the crews at work are especially important because they keep the leaders in close touch with the crews and their work and make possible immediate action to handle special problems or correct faulty procedures.

The efficiency of the ribes eradication work in completed areas is determined by measured general checks. Most of this checking is performed by the district leaders but experienced supervisory foremen also serve as checkers in districts where the number and distribution of crews require their assistance. The measured general checks are made by running half rod or rod-wide strips through the most likely ribes sites in an area. A record is kept of the strip acreage and the number and live stem footage of ribes found. All areas that have more than 20 feet of live stem per acre require reworking to bring the ribes below the standard. Reports of these checks are forwarded to the regional office weekly, where they are summarized on a semi-monthly or monthly basis. Copies of the summaries are furnished the state and district leaders concerned.

The district leaders and their assistants spent 5,141 hours making 2,702 checks in worked areas during 1947. A total of 12,294 ribes with 31,040 feet of live stem were found on the 4,371.2 acres covered by the checks, or an average of 2.8 bushes with 7.1 feet of live stem per acre. The eradication assistants made 65.6% of these checks in the region and 84.6% of such checks in New York. The following table summarizes the results of the 1947 checking by states and gives an analysis of the data on the basis of averages per district.



Table 13- Results of Measured General Checks of 1947 Ribes Eradication Work

State	Checks Made By	No. Checks	Hours Checking	Acres in Strip Checks	Ribes Found on Checks		Ribes Live Stem Found on Checks		Control Work	
					Total No.	Ave. Per Acre	Total FLS	FLS Per Acre	Approved	Dis-approved
Maine	District Leaders	48	58	38.87	210	5.4	456	11.7	43	5
	Erad. Assistants	52	62	34.97	218	6.2	268	7.7	51	1
	Total	100	120	73.84	428	5.8	724	9.8	94	6
N.H.	District Leaders	87	146	76.58	244	3.2	533	7.0	84	3
	Erad. Assistants	117	145	92.97	197	2.1	443	4.8	116	1
	Total	204	291	169.55	441	2.6	976	5.8	200	4
Vt.	District Leaders	172	192	183.95	809	4.4	1929	10.5	161	11
	Erad. Assistants	18	31	22.78	112	4.9	239	10.5	17	1
	Total	190	223	206.73	921	4.5	2168	10.5	178	12
Mass.	District Leaders	167	206	174.25	650	3.7	1591	9.1	161	6
	Erad. Assistants	172	404	153.0	161	1.1	468	3.1	172	-
	Total	339	610	327.25	811	2.5	2059	6.3	333	6
R.I.	All By District Leader	36	121	36.81	125	3.4	734	19.9	32	4
Conn.	District Leaders	43	45	32.49	180	5.5	612	18.9	38	5
	Erad. Assistant	6	6	1.54	6	3.9	7	4.5	6	-
	Total	49	51	34.03	186	5.5	619	18.2	44	5
N.Y.	District Leaders	257	373	361.0	1146	3.2	2080	5.8	248	9
	Erad. Assistants	1,407	3232	3061.11	7482	2.4	19,873	6.5	1359	48
	Total	1,664	3605	3422.11	8628	2.5	21,953	6.4	1607	57
Penna.	All By District Leaders	120	120	100.89	754	7.5	1,807	17.9	89	31
All States	District Leaders	930	1261	1004.84	4118	4.1	9,742	9.7	856	74
	Erad. Assistants	1,772	3880	3366.37	8176	2.4	21,298	6.3	1721	51
	Total	2,702	5141	4371.21	12,294	2.8	31,040	7.1	2577	125

Analysis

State	No. Districts	Averages Per District				% Total Acreage Worked During 1947 Covered By Measured General Checks	% Worked Areas Checked Which Were Approved
		Acreage Cleared of Ribes*	No. Measured General Checks	Hours On Measured General Checks	Acreage of Measured General Checks		
Maine	3	54,686	33.3	40.0	24.6	0.04	94.0
N.H.	6	18,025	34.0	48.5	28.3	0.16	98.0
Vt.	3	23,337	63.3	74.3	68.9	0.29	93.7
Mass.	3	24,021	113.0	203.3	109.1	0.45	98.2
R.I.	1	20,412	36.0	121.0	36.8	0.18	88.9
Conn.	2	14,151	24.5	25.5	17.0	0.12	89.8
N.Y.	8	54,873	208.0	450.6	427.8	0.78	96.6
Penna.	3	22,123	40.0	40.0	33.6	0.15	74.2
All States	29	33,391	93.2	177.3	150.7	0.45	95.4

\*Based on total acreage cleared of ribes in each state including work on federal lands.



Based on regional totals, the results of the general checking work during the past two years have been almost identical. A total of 2,702 checks were made during 1947 as compared with 2,703 the previous year, and the work was approved on 95.4% of all the areas checked each year. There were decreases of only 0.6% in total time spent on such checking work and 1.8% in acreage checked. An average of 2.8 bushes per acre were found on the 1947 checks, which is only 0.3 of a bush more than in 1946, while the average live stem per acre increased from 6.4 to 7.1 feet. The 1947 averages by states ranged from 2.5 feet per acre in Massachusetts to 7.5 feet in Pennsylvania. The latter is considerably below the 1946 highest average of 16.6 feet in Connecticut.

All states, except Massachusetts and New York, were considerably below the arbitrary checking goal of 1% of the total acreage worked. A large percentage of the checking work in these two states was performed by eradication assistants. Few measured general checks are feasible in Rhode Island and Connecticut where ribes populations are generally very low and most of the control work is performed by scouting methods. In the other states, especially Maine, more emphasis has been placed on supervisory inspections of the crews at work.

The work on only 4.6% of all the areas checked during 1947 was disapproved and the data for the checks in disapproved areas show the following:

<u>State</u>	<u>No. Checks Where Work Disapproved</u>	<u>Average Live Stem Per Acre Found on Checks in Disapproved Areas</u>	<u>Maximum Live Stem Per Acre Found on Check in Any Disapproved Area</u>
Maine	6	51.3	134.0
N. H.	4	25.0	137.5
Vt.	12	45.8	92.0
Mass.	6	32.4	48.0
R. I.	4	99.6	194.8
Conn.	5	103.3	416.0
N. Y.	57	29.6	240.0
Penna.	31	35.9	231.0
All States	125	36.3	416.0

The 31 checks in disapproved areas in Pennsylvania represented 25.8% of all the areas checked in that state. Due to the large number of bushes present in some sections of Pennsylvania, exceptionally good work is necessary to reduce the live stem to the standard of 20 feet or less. In the other states, the disapproved areas comprised from 1.8% to 11.1% of all those checked. Although few areas were disapproved in Rhode Island and Connecticut, they represented 11.1% and 10.2% of the total checked, but the checking work in these two states is restricted to areas with ribes concentrations.

#### Transportation Problems

Maintenance of adequate transportation facilities continued to be a major problem during 1947. Early in the year purchase orders were placed for 32 new trucks, but none of these were delivered until after the close of the ribes eradication



season. A total of 45 old federal trucks (1935-1939 models) were available for transporting laborers, but extensive, continued and costly repairs were essential to keep most of them in usable condition. The average age of these trucks was 11 years, and many of them have been driven in excess of 100,000 miles over rough roads in rural sections. A few state and county-owned vehicles were available for crew transportation in New York. It was also necessary to authorize a few L/A employees in several states to use their personally-owned machines on a mileage basis. It proved difficult to make such arrangements at the 5 cents per mile rate. In some instances, control work had to be postponed due to lack of transportation. Twelve of the very poor trucks were turned in, but the remaining 33 will be kept serviceable during 1948 and with the 32 new trucks should provide more adequate transportation facilities.

Eighteen of the 33 passenger cars in this region were procured during the period 1933 to 1939, and the remaining 15 are 1940-1942 models. Three replacement vehicles were purchased in June, 1948, and orders were placed for four more during fiscal year 1949. Three of these four were delivered in March, 1948. Several of the other old cars are now in poor condition and will be replaced at the earliest possible date.

#### Injuries to Temporary Federal Employees

A total of 945 temporary workers were employed for 33,986 man days on Federal 3103 L/A funds in this region during the calendar year 1947. Of these only 14 sustained injuries while on official duty which resulted in any charge against the Bureau of Employees' Compensation for medical expenses. Twelve of the injured employees were disabled and lost a total of 53½ working days which represented only 0.16% of the total man days of federal employment as compared with 0.66% in 1946. One employee had a severe case of ivy poisoning and lost 17 working days. Time lost by the other 11 injured employees ranged from one to seven work days. No injuries involving expense for medical treatment were reported for temporary employees in Vermont and Connecticut. However, a crew working near Barnard Center, Vermont on June 30, 1947 narrowly escaped being killed by a bolt of lightning during a sudden torrential rainstorm. All seven men in the crew were knocked down and stunned for several minutes. The crew foreman was burned on the arms and one of the laborers received a severe burn on the neck. The latter employee was treated by a local physician at no charge to the Government and was disabled for only one day. The other men suffered no serious ill effects from their harrowing experience and were back on the job the next day, although there was some complaint of headaches and soreness in the legs.

The following tabulation lists the number and types of injuries during 1947 by states:



<u>State</u>	<u>Total No. Injuries</u>	<u>Type of Injury</u>			
		<u>Ivy or Oak Poisoning</u>	<u>Sprains &amp; Bruises</u>	<u>Lacerations &amp; Punctures</u>	<u>Misc.*</u>
Maine	3	1	1	-	1
N. H.	1	1	-	-	-
Mass.	2	-	2	-	-
R. I.	1	1	-	-	-
N. Y.	6	2	3	1	-
Penna.	1	-	1	-	-
Total	14	5	7	1	1

\*Infected finger - cause unknown

Half of the 1947 injuries were sprains and bruises, all but one of which were due to falls. Only five cases of ivy or oak poisoning were reported, but they comprised 35.7% of the total injuries as compared with 20% in 1946.

In addition to the injuries indicated above, District Leader Wheeler, of Massachusetts, was disabled for several weeks during May and June as a result of an injury sustained in a vehicle accident en route to work with three state employees. The tie rod on the car broke sending the machine into a ditch where it over-turned. All occupants were thrown out of the car and badly shaken up. One of the Cambridge Office clerks also sustained a minor accident (punctured finger) which required medical treatment.

#### State Compensation For Cultivated Ribes Destroyed During 1947

For the third year since 1918, the states were not required to pay any compensation for cultivated ribes destroyed during 1947. A total of 9,769 bushes were removed. Table 54 in the Appendix lists information on cultivated ribes compensation for all years.

#### Nursery Sanitation Work During 1947

Sanitation work was performed this year in the environs of six state and two privately-owned nurseries which were growing approximately 33,335,000 white pines for reforestation purposes. Over 93% of these trees were in three state nurseries in New York. Only 269 ribes were located and destroyed on the 4,373 acres examined in the sanitation zones around all 8 nurseries. The work was done with 107 man days of labor.

Table 14 summarizes the results of the 1947 nursery sanitation work by states, while Tables 47 to 50 in the Appendix show the accumulative accomplishments and the present status of such activities.



Table 14 - Nursery Sanitation Work During 1947  
(All Rework)

State	No. Nurseries Worked		Est. Number White Pines in Nurseries Worked	Acreage Worked	No. Ribes Destroyed (all wild)	Total Man Days	Ribes Per Acre	Acres Worked Per Man Day
	Private	State						
N. H.	-	1	500,000	293	1	2	0.003	146.5
Vt.	-	1	250,000	333	47	3	0.1	112.3
Conn.	2	1	1,535,000	762	38	47	0.05	16.2
N. Y.	-	3	31,050,000	2,985	183	55	0.06	54.3
All States	2	6	33,335,000	4,373	269	107	0.06	40.9

#### Blister Rust Canker Elimination Work

At the request of officials of the New York City Water Department and the Metropolitan District Commission in Massachusetts, two of the district leaders gave technical supervision for blister rust canker elimination work in white pine plantations. These areas were around the Ashokan reservoir in the towns of Harley and Marbletown, N.Y. and on the Quabbin Reservation in Massachusetts. Out of an estimated total of 38,090 pines examined, 1,807 fatally infected trees were removed and 1,470 other diseased pines were treated by the removal of 2,650 branch cankers. This was accomplished by use of 241 man days of labor furnished by the cooperators including one state employee assigned to the project in New York.

The details of the 1947 work are summarized in Table 15, while Tables 56 and 57 in the Appendix show the results of such activities since 1932 by states, programs, and land ownership classes.

Table 15 - Blister Rust Canker Elimination Work During 1947

State	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines Treated For Infection	No. Cankers Removed		Total Man Days
				Branch	Stem	
Mass.	13,850	157	233	826	-	60
N. Y.	24,240	1,650	1,237	1,824	-	181
Total	38,090	1,807	1,470	2,650	-	241



## Status of Control Work on State and Privately-Owned Lands

The present net control area on state and privately-owned lands in this region comprises 11,898,776 acres, of which 4,138,742 acres is in white pine growth meeting minimum stocking requirements. Detail maps have been prepared for 72% of the total control area, but most of these maps are from 10-15 years old and now need correction due to innumerable changes in the forest types. Based on regional totals, initial control work has been performed on 90.0% of the present net control area, 45.2% has been worked twice, 8.4% three times, and 30.9% has been placed on maintenance. The latter includes the entire control area in Rhode Island, Connecticut, and New Jersey. A special effort has been made during recent years to place areas on maintenance as rapidly as practicable, and to reduce the total control area by eliminating sub-standard as well as scattered small pine areas and by cutting the width of excessive protection zones. In this connection, the total control area on state and private lands has been reduced from 12,678,954 acres in 1943 to 11,898,776 acres in 1947, a total reduction of 780,178 acres in the past four years. During this same period the total acreage of white pine in the control area dropped only 117,096 acres. The decrease in the total control area amounted to 6.2% as compared with a reduction of only 2.8% in the total pine acreage.

At the end of 1947, a total of 3,673,895 acres, or 30.9% of the total control area had been classified as being on maintenance which represents a net increase of 1,254,762 acres since 1943. The following table shows the current status of control work in each of the states.

Table 16 - Status of Blister Rust Control Work on State and Private Lands  
(December 31, 1947)

Total Acreage of Net Control Area	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked			Acreage on Main- tenance	Percentage of Net Control Area			
			Once	Twice	Three Times		Detail Mapped	Worked Once	Worked Twice	On Main- tenance
2,459,271	965,256	2,154,122	2,205,308	1,120,581	68,048	567,846	87.6	89.7	45.6	23.1
2,953,198	1,309,968	1,491,639	2,784,438	963,053	75,046	462,887	50.5	94.3	32.6	15.7
709,471	155,782	692,344	499,349	207,111	19,355	149,280	97.6	70.4	29.2	21.0
1,628,111	593,997	1,010,350	1,595,129	1,032,960	121,688	971,275	62.1	98.0	63.4	59.7
130,111	61,204	115,707	130,111	130,111	45,804	130,111	88.9	100.0	100.0	100.0
465,803	85,851	465,803	465,803	311,599	145,848	465,803	100.0	100.0	66.9	100.0
2,833,343	826,908	1,979,162	2,411,253	1,459,430	483,997	750,826	69.9	85.1	51.5	26.5
16,742	3,771	0	16,742	1,417	0	16,742	0	100.0	8.5	100.0
702,726	136,005	653,169	600,052	155,862	39,240	159,123	92.9	85.4	22.2	22.6
11,898,776	4,138,742	8,562,296	10,708,185	5,382,124	999,026	3,673,895	72.0	90.0	45.2	30.9



Compared with the previous year, there was a reduction of 259,181 acres in the total control area during 1947, decreases occurring in all states, except Maine and New Jersey, and ranging from 8,699 acres in Connecticut to 71,337 acres in New Hampshire. A considerable portion of the acreage discontinued from the control area in 1947 had been worked previously. This is indicated by the fact that although over 217,000 acres of initial work was performed on state and private lands in 1947, the total acreage that had been worked once (10,708,185 acres) at the end of this year was 30,740 acres less than the total of 10,738,925 acres reported at the end of 1946. However, the percentage of initial work completed in the region increased from 88.3% in 1946 to 90.0% this year. In Vermont, the increase was from 63.8% to 70.4%, while Pennsylvania jumped from 80.3% to 85.4%.

As indicated in Table 16, the entire control area in Rhode Island has been worked twice and second work has been performed on more than half of the total control area in Massachusetts, Connecticut, and New York.

#### Future Control Work on State and Privately-Owned Lands

The objective of the five year post-war program for blister rust control work in this region is to complete all initial ribes eradication work and any rework necessary to place most of the control area on a maintenance basis. This objective has already been reached in Rhode Island, Connecticut, and New Jersey. Operations have been suspended since 1937 in the latter state, but some follow-up work will be required within a few years. On the basis of 1946 and 1947 accomplishments, the goal will be reached on schedule in New York provided adequate federal funds are available to match the increased state appropriation. A similar situation prevails in Pennsylvania where the state allotment for control work was increased to \$25,000. for the fiscal year 1948. The control program is well advanced in Massachusetts where the objectives of the five year plan might be accomplished with only a nominal increase in funds. However, in the three northern New England States, especially New Hampshire, greatly accelerated programs will be required to accomplish the desired results. This does not appear feasible now because of the recent drastic reduction in Federal funds.

At the end of 1947, initial detail mapping was still needed on 3,336,480 acres or 28.0% of the present net control area on state and privately-owned lands. In addition, many of the detail maps which were prepared 10-15 years ago require revision to show the many timber type changes that have occurred. Considerable remapping work has been performed during recent years, but data are not available at this time on the amount still needed. Nearly 44% of the remaining initial mapping work is in New Hampshire. It is anticipated that refinements will be made in the present procedure for using aerial photographs which will greatly facilitate future control area mapping work in the region.

Nearly 75% of the remaining 1,190,591 acres of initial control work is in three states - Maine, Vermont, and New York. The total of 422,090 acres in the latter state includes 228,474 acres in the western part of the state, outside the present districts, where the pine consists chiefly of scattered woodlots and plantations. A recent general survey of many of these pine areas revealed that a large part of this western New York acreage does not warrant protection work



so will be discontinued. It is planned to have the state district foresters supervise any necessary control work in this part of the state.

Progress made during 1947 in completing the initial control work in the various states was as follows:

State	Acreage in Net Control Area In Need of Initial Work at End of		Net Reduction in Acreage of Remaining Initial Work During 1947	Number Years To Complete Initial Work on Basis of 1947 Accomplishments
	1946	1947		
Maine ...	273,046	253,963	19,083	13.3
N. H. ...	217,591	168,760	48,831	3.6
Vt. ....	266,900	210,122	56,778	3.7
Mass. ...	45,062	32,982	12,080	2.7
N. Y. ...	468,477	422,090	46,387	9.1 <sup>a</sup>
Penna....	147,956	102,674	45,282	2.3
Total	1,419,032	1,190,591	228,441	5.2

<sup>a</sup>On basis of present districts only remaining initial work could be completed in 4.2 years.

Based on estimates submitted by the district leaders at the end of 1947, there was a total of 5,206,465 acres in the region which should be examined to determine the need for rework. However, there is a total of 7,034,290 acres which has been worked at least once but not placed on maintenance. This entire acreage will have to be examined and any necessary rework performed before being put in the maintenance class. The following tabulation shows the length of time it would take to complete this rework based on rate of progress made in each state during 1947.

State	Total Acreage Worked But Not Placed on Maintenance at End of 1947	Total Acreage Reworked During 1947	Number of Years to Complete Remaining Rework on Basis of 1947 Accomplishments*
Maine.....	1,637,462	134,620	12.2
N. H.....	2,321,551	82,101	28.3
Vt.....	350,069	31,739	11.0
Mass.....	623,854	47,037	13.3
N. Y.....	1,660,425	358,076	4.6
Penna. ....	440,929	40,236	11.0
Total.....	7,034,290	693,809	10.1

\*Computed on basis of entire acreage needing rework. However, many areas contain very few ribes and will not require intensive work.

Table 17 gives detailed information, by states, on the mapping and ribes eradication work needed on state and privately-owned lands at the end of 1947.



Table 17 - Control Work Needed on State and Privately-Owned Lands  
As of December 31, 1947

State	Total Acreage of Net Control Area	Acreage in Net Control Area in Need of			Percentage of Net Control Area in Need of		
		Initial Detail Mapping	Initial Erad.	Examin- ation(1)	Initial Detail Mapping	Initial Erad.	Examin- ation
Maine	2,459,271	305,149	253,963	1,465,438	12.4	10.3	59.2
N.H.	2,953,198	1,461,559	168,760	2,066,379	49.5	5.7	70.0
Vt.	709,471	17,127	210,122	136,333	2.4	29.6	19.2
Mass.	1,628,111	617,761	32,982	375,347	37.9	2.0	23.1
R. I.	130,111	14,404	0	0	11.1	0	0
Conn.	465,803	0	0	0	0	0	0
N. Y.	2,833,343	854,181	422,090	758,597	30.1	14.9	27.8
N. J.	16,742	16,742	0	0	100.0	0	0
Penna.	702,726	49,557	102,674	374,371	7.1	14.6	53.3
All States	11,898,776	3,336,480	1,190,591	5,206,465	28.0	10.0	43.8

(1) Based on estimates by district leaders of total acreage currently in need of examination to determine portions requiring rework. A total of 7,034,290 acres in the region has been initially worked but not placed on maintenance. This entire acreage will have to be examined and all necessary rework performed before being put on maintenance.

#### Expenditures For Project BLR-3-1

State and local cooperative expenditures for Project BLR-3-1 during the calendar year 1947 totalled \$267,918.32, which represents an increase of 41.6% over 1946. There were increases in all states except Vermont which had a decrease of only 6.5%. The most noteworthy increases in the other states were as follows: New Hampshire - 74.8%, Pennsylvania - 53.2%, and New York - 44.1%. State and local cooperative expenditures and contributed services for Project BLR-3-1 in New York during 1947 amounted to \$154,604.21 and comprised 57.7% of the total for the region.

Federal 3103 expenditures for cooperative control work in the region during the calendar year 1947 totalled \$300,316.70, or approximately 6% less than in 1946. This decrease was due to the drastic reduction in the appropriation for the fiscal year 1948. Of the total federal expenditures, 78.5% was used for the wages of temporary L/A laborers, 10.1% for non-labor expenses, 9.4% for purchase orders, and 2.0% for salaries of appointees. The purchase order obligations included the cost of 32 new half-ton pick-up trucks and three new passenger cars paid from fiscal year 1947 allotments. Compared with the previous year there was an increase of 94.0% in Federal 3103 money expended for non-labor expenses in 1947 due to the necessity for paying all leaders' expenses from such funds after July 1, 1947.

Table 18 lists all expenditures and contributed services for Project BLR-3-1 during the calendar year 1947 by states.



Table 18 - Total Expenditures and Contributed Services For Work Project BLR-3-1 During Calendar Year 1947

State and Local Cooperative Expenditures and Contributed Services										
State	Cash Expenditures				Value of Contributed Services		B. E. & P. Q. (3103)**	Grand Total		
	State Funds	Towns	Counties	Indiv.	Sub-Total	Total				
						State			Counties	
Maine	5,394.23	9,190.36	-	-	14,584.59	550.00	-	15,134.59	46,844.46	61,979.05
N. H.	11,029.96	31,295.53	-	-	42,325.49	2065.34	-	44,390.83	55,751.08	100,143.81
Vt.	653.75	5,679.03	-	4.00	6,336.78	1142.25	-	7,479.03	33,829.07	41,308.10
Mass.	7,455.09	-	-	5965.24	13,420.43	1160.00	-	14,580.43	23,355.12	37,945.55
R. I.	3,970.00	-	-	-	3,970.00	808.02	-	4,778.02	3,344.26	8,122.28
Conn.	4,895.70	1,677.30	-	337.31	6,910.31	1360.00	-	8,270.31	10,052.25	18,322.56
N. Y.	125,729.98	-	15,631.81	1287.50	142,649.29	10,699.92	1255.00	154,604.21	98,772.96	253,377.17
Penna.	17,779.90*	-	-	-	17,779.90	900.00	-	18,679.90	28,356.60	47,036.50
All States	176,908.61	47,842.22	15,631.81	7594.15	247,976.79	18,686.53	1255.00	267,918.32	300,316.70	568,235.02

\*In addition, \$65.60 state money expended on Allegheny National Forest project.

\*\*In addition, total of \$338.11 Federal 3103 money spent on national forest projects.

Classification of B. E. and P. Q. Expenditures For Project BLR-3-1 During Calendar Year 1947

State	Salaries of Appointees	L/A Expenditures		Sub-Total	Purchase Orders	Total
		Wages of Laborers	Non-Labor Expenses			
Maine	-	36,407.10	4,625.76	41,032.86	5,811.60	46,844.46
N. H.	-	43,511.50	5,598.48	49,109.98	6,642.00	55,751.98
Vt.	-	26,743.00	4,595.32	31,338.32	2,490.75	33,829.07
Mass.	-	18,221.60	2,652.77	20,874.37	2,490.75	23,365.12
R. I.	538.66	2,360.00	445.60	2,805.60	-	3,244.26
Conn.	2,750.76	5,498.80	972.44	6,471.24	830.25	10,052.25
N. Y.	2,787.12	80,523.75	7,980.67	88,504.42	7,481.42	98,772.96
Penna.	-	22,528.66	3,337.19	25,865.85	2,490.75	28,356.60
All States	6,076.54	235,794.41	30,208.23	266,002.94	28,237.52	300,316.70
% Total	2.0	78.5	10.1	88.6	9.4	100.0

In addition to the Federal 3103 expenditures listed in Table , a total of \$1,249.87 was expended for the Cambridge regional office.



## PART IV

### BLISTER RUST CONTROL WORK ON NATIONAL FORESTS IN NORTHEASTERN REGION FINANCIAL PROJECT BLR-4

The Bureau of Entomology & Plant Quarantine is cooperating with the U. S. Forest Service in the control of white pine blister rust on the three national forests in the Northeastern Region. At the end of 1947, the net control area on these forests totalled 8,797 acres, of which 2,405 acres is in white pine. Compared with the previous year, there was an increase of 1,452 acres in the total net control area due to the addition of several units on the White Mountain and Allegheny Forests.

All ribes eradication work scheduled for 1947 on the Green Mountain and Allegheny Forests was completed, and no further work is recommended on these two forests during the next few years. All scheduled work on White Mountain Forest areas in Maine was also completed during 1947, but there are twelve units, aggregating 1193 acres, in New Hampshire where work is planned for May and June, 1948 and Forest Service funds have been allotted for this purpose. When this proposed work is accomplished, all three national forests in the region should be in good condition as regards blister rust control.

#### Ribes Eradication Work During Calendar Year 1947

##### White Mountain National Forest

As a result of a survey conducted during the spring of 1947 by Forest Service rangers in cooperation with three of our district leaders in New Hampshire and Maine, several units were added to the control area on the White Mountain National Forest. A few of these tracts had been discontinued from the control area in 1943 and 1945, but the current reappraisal of their blister rust control needs and present pine values indicated they should be brought back into active control status.

Ribes eradication work was performed on four areas in Stoneman and Gilead, Maine during June, 1947 under the supervision of District Leader Pike, of Bridgton, Maine and District Leader Boomer, of North Conway, N.H. The latter has supervised all cooperative control activities on the White Mountain National Forest, both in New Hampshire and Maine, for several years. Due to his intimate knowledge of local conditions, Mr. Boomer supervised the 1947 work on two of the areas in Maine, but arrangements have been made for Mr. Pike to direct all future control activities on national forest lands in that state. Mr. Boomer prepared a report on the results of the work performed in June and copies of this report were furnished the Forest Service. Additional work was performed on two areas in Mason, Maine during August. Table 19 summarizes the results of all 1947 ribes eradication work on the White Mountain National Forest by block units.



Table 19 - Ribes Eradication Work on White Mountain National Forest - 1947

Block Unit	Type of Work	Acreage Worked	No. Ribes Destroyed (All Wild)	Total Man Days	Per Acre		Acres Worked Per Man Day
					Ribes	Man Days	
Stoneham, Me. #1	Second	87 <sup>a</sup>	151	3	1.7	.034	29.0
" #2	First	395	1,112	55	2.8	.139	7.2
" #8	First	25	75	1	3.0	.040	25.2
Gilead, Me. #9	Third	42 <sup>**</sup>	129	3	3.1	.071	14.0
Mason, Me. #4 & #6	First	238	60	13	0.3	.055	18.3
Totals	First	658	1,247	69	1.9	.105	9.5
	Second	87	151	3	1.7	.034	29.0
	Third	42	129	3	3.1	.071	14.0
	Total	787	1,527	75	1.9	.095	10.5

\*Total area of unit is 112 acres, but only 87 acres needed rework

\*\*Total area of unit is 275 acres, but only 42 acres needed rework

#### Green Mountain National Forest

During May and June, 1947 three areas on the Green Mountain National Forest in the townships of Wallingford, Goshen, and Hancock, Vt. were cleared of ribes under the supervision of District Leader Mulholland. His report of control activities on this forest during the entire fiscal year 1947 gives detailed information on the results accomplished this calendar year. Copies of this report have been furnished the Forest Service officials concerned. All necessary ribes eradication work has now been completed on this forest and the entire control area has been placed on maintenance. However, District Leader Mulholland recommends that all areas be examined by 1952 to determine the need for rework. Table 20 summarizes the results of control activities on the Green Mountain National Forest during the calendar year 1947.

Table 20 - Ribes Eradication Work on Green Mountain National Forest - 1947  
(All First Work)

Township	Acreage Worked	No. Ribes Destroyed (All Wild)	Total Man Days	Per Acre		Acres Worked Per Man Day
				Ribes	Man Days	
Goshen	140	1,953	12	14.2	.036	11.7
Hancock	60	52	3	0.9	.050	20.0
Wallingford	120	918	7	7.7	.058	17.1
Total	320	2,953	22	9.2	.069	14.5



### Allegheny National Forest

The Forest Service employed one crew during May and June, 1947 to complete all scheduled ribes eradication work in the northern ranger district of the Allegheny National Forest under the supervision of District Leader DeBerti. A detailed report of such activities was prepared by Mr. DeBerti and copies furnished the Forest Service. That report indicates that no further work will be necessary on this forest until 1952 except on two tracts (Henry's Mills and Elkhorn Run) where heavy thinnings were planned during the fall and winter of 1947-48. These two areas should be examined within three or four years to determine the amount of white pine and ribes regeneration. Numerous ribes were located and destroyed on some of the areas worked during 1946 and 1947 and for this reason such units were not placed on maintenance. The results of the 1947 control activities are summarized in Table 21.

Table 21 - Ribes Eradication Work on Allegheny National Forest - 1947

Area	Type of Work	Acreage Worked	No. Ribes Destroyed (all wild)	Total Man Days	Per Acre		Acres Worked Per Man Day
					Ribes	Man Days	
1-Heart's Content	First	10	4,190	35	419.0	3.50	0.3
	Other	461	2,789	41	6.0	.089	11.2
	Total	471	6,979	76	14.8	.161	6.2
4-Sandstone Springs	Second	119	1,200	16	10.1	.134	7.4
	Other	36	133	6	3.9	.167	6.0
	Total	155	1,333	21	8.6	.135	7.4
5-Hoffman Farm	Other	155	236	11	1.5	.071	14.1
7-Dunn Run & Kelly Hall	Second	1,162	1,339	32	1.2	.028	36.3
14-Merrison Run	First	70	523	8	7.5	.114	8.7
19-Still Run	"	70	2,937	22	42.0	.314	3.2
22-Ack or Hunter Farm	"	210	2,327	25	11.1	.119	8.4
23-Economy Farm	"	175	7,299	53	41.7	.303	3.3
All Areas	First	535	17,281	143	32.3	.267	3.7
	Second	1,281	2,539	48	2.0	.037	26.7
	Other	652	3,164	58	4.9	.069	11.2
	Total	2,468	22,984	249	9.3	.101	9.9



Table 22 - Summary of All 1947 Ribes Eradication Work on National Forests in Northeastern Region

Forest	Type of Work	Total Acreage Worked	No. Ribes Destroyed (all wild)	Total Man Days	Per Acre		Acres Worked Per Man Day
					Ribes	Man Days	
White Mountain (Maine)	First	658	1,247	69	1.9	.105	9.5
	Second	87	151	3	1.7	.034	29.0
	Other	42	129	3	3.1	.071	14.0
	Total	787	1,527	75	1.9	.095	10.5
Green Mountain	All First	320	2,953	22	9.2	.069	14.5
Allegheny	First	535	17,281	143	32.3	.267	3.7
	Second	1,231	2,539	48	2.0	.037	26.7
	Other	652	3,164	58	4.9	.089	11.2
	Total	2,468	22,984	249	9.3	.101	9.9
Total	First	1,513	21,481	234	14.2	.155	6.5
	Second	1,368	2,690	51	2.0	.037	26.8
	Other	694	3,293	61	4.7	.088	11.4
	Total	3,575	27,464	346	7.7	.097	10.3

Expenditures During Calendar Year 1947

Due to the relatively small amount of money involved, all obligations in connection with the three Forest Service projects in this region during 1947 were paid from B.E. and P.Q. funds on a reimbursable basis. Laborers assigned to these projects were paid bi-weekly, the payrolls being prepared at our Cambridge Regional Office and forwarded to the Boston Treasury Disbursing Office for payment.

The Forest Service allotment for the Allegheny National Forest was insufficient to complete all scheduled work prior to July 1, 1947 and part of the labor costs during the last payroll period in June were paid from our Bureau and state funds. Additional funds were also needed to complete all necessary work on White Mountain National Forest areas in Maine during June, and arrangements were made to transfer an additional \$350.00 from the Green Mountain and George Washington Forest allotments for the fiscal year 1947. A small amount of B.E. and P.Q. money was also spent for non-labor expenses on the White Mountain and Green Mountain Forest projects during 1947. The following summary shows the status of the Forest Service allotments for the fiscal years 1947 and 1948, while Table 23 summarizes expenditures by all cooperating agencies during the calendar year 1947.



Forest Service Allotments For Fiscal Year 1947

White Mountain National Forest

Original allotment.....	\$100.00
Increase by transfers from Green Mountain and George Washington.....	350.00
Total allotment.....	\$450.00
Expenditures during June, 1947.....	395.60
Unexpended balance.....	\$ 54.40

Green Mountain National Forest

Original allotment.....	\$600.00
Expenditures during calendar year 1946.....	129.80
Balance on January 1, 1947.....	\$470.20
Transferred to White Mountain.....	250.00
Net balance for calendar year 1947.....	\$220.20
Expenditures during May and June, 1947.....	162.85
Unexpended balance.....	\$ 57.35

Allegheny National Forest

Original allotment.....	\$3,000.00
Expenditures during calendar year 1946.....	1,653.83
Balance on January 1, 1947.....	\$1,346.17
Expenditures during May and June, 1947.....	1,246.17
Unexpended balance.....	\$ 100.00*

\*This amount was reserved to cover charge for use of Forest Service truck on project, but no action was taken to process charge.

Forest Service Allotment For Fiscal Year 1948

White Mountain National Forest

Original allotment.....	\$900.00
Expenditures during August, 1947.....	91.00
Balance on January 1, 1948.....	\$809.00



Table 23 - Total Expenditures For Blister Rust Control on National Forests  
Calendar Year 1947

Forest	Forest Service			B.E. and P.Q.			State (all wages)	Total
	Wages	Expenses	Total	Wages	Expenses	Total		
White Mountain	\$486.60	-	\$486.60	-	\$7.53	\$7.53	-	\$494.13
Green Mountain	156.00	\$6.85	162.85	-	11.30	11.30	-	174.15
Allegheny	1246.17	-	1246.17	\$319.23	-	319.23	\$65.60	1,631.00
Total	\$1888.77	\$6.85	\$1895.62	\$319.23	\$18.68	\$338.11	\$65.60	\$2,299.33

Plans For Control Work During Calendar Year 1948

White Mountain National Forest

The \$809.00 unexpended balance in the Forest Service allotment to this forest for the fiscal year 1948 will be used during May and June, 1948 to complete all work currently required on 12 units in New Hampshire comprising a total of 1,193 acres. The areas involved are as follows:

<u>Ranger District</u>	<u>Area</u>	<u>Acres</u>	<u>Type of Work</u>
Androscooggin	Stark #1	150	First
Annonesuc	Lundaff #5	80	Second
			(45 First
Penigewasset	Thornton #5 (Mud Pond)	80	(35 Second
"	Thornton #4	30*	Second
"	Thornton #6	50*	Second
"	Benton #3	68*	Third
"	Benton #7	200	First
"	Easton #4	20*	Second
Saco	Bartlett #7	15	Second
"	Albany #5 (High St.)	250	Third
"	Albany #11 (Big Brook)	200	Third
"	Albany #12 (Faugus)	50	First
Total	-	1,193	-

\*These areas were not included in statement submitted by Forest Supervisor to his regional office on March 7, 1947 estimating control work needed on White Mountain National Forest during fiscal year 1948.



### Status of Control Work on National Forests

At the end of 1947, the net control areas on the three national forests in this region aggregated 8,797 acres. Initial control work has been completed on the Green Mountain and Allegheny Forests, but there are 445 acres (units added in 1947) on the White Mountain Forest in need of initial protection. Approximately 71% of the national forest control areas have been worked twice and third work has been performed on about 47% of the acreage. All of the control area on the Green Mountain Forest has been classified as being on a maintenance basis - most of the units on this forest had relatively few ribes. On the other hand, numerous bushes have been encountered on many of the White Mountain and Allegheny Forest areas and maintenance classification for some of the units has not been considered advisable until after the next working. However, no control work should be necessary on any of the forests during the next few years if the proposed program for 1948 is carried to completion.

Table 24- Status of Ribes Eradication Work in Present Net Control Areas on National Forests  
(December 31, 1947)

Forest		Total Acreage	Acreage of White Pine	Acreage Detail Mapped	Acreage Worked			Acreage Initial Work Still To Be Done	Acreage Now on Maintenance Basis	Percentage of Control Area		
					First Work	Second Work	Other Workings			Worked Once	Worked Twice	On Maintenance
White Mt.	Maine	1,156	368	1,156	1,156	473	428	-	498	100.0	40.9	43.0
	N. H.	3,523	1,144	3,013	3,078	2,963	2,367	445	2,402	87.4	84.1	68.0
	Total	4,679	1,512	4,169	4,234	3,436	2,795	445	2,900	90.5	73.4	62.0
Green Mt.		573	89	513	573	115	-	-	573	100.0	20.1	100.0
Allegheny		3,545	804	3,545	3,545	2,690	1,314	-	1,943	100.0	75.9	54.0
Total		8,797	2,405	8,227	8,352	6,241	4,109	445	5,416	94.9	70.9	61.0



Table 25 - Ribes Eradication Work on National Forests, 1924-1947, Inclusive

Forest	Program	Type of Work	Gross Acreage Reported Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
				Wild & Cult.	Cult. Only		Ribes	Man Days	
White Mountain	Regular	Initial	7,549	183,823	-	631	24.4	.084	12.0
		Rework	8,646	19,368	-	345	2.2	.040	25.1
		Total	16,195	203,196	-	976	12.5	.060	16.6
	C.C.C.	Initial	1,950	633,866	85	2,325	325.1	1.192	0.8
		Rework	3,799	309,521	-	1,700	81.5	.447	2.2
		Total	5,749	943,387	85	4,025	164.1	.700	1.4
	Total	Initial	9,499	817,694	85	2,956	86.1	.311	3.2
		Rework	12,445	328,889	-	2,045	26.4	.164	6.1
		Total	21,944	1,146,583	85	5,001	52.2	.228	4.4
Green Mountain	All Regular	Initial	458	3,298	-	31	7.2	.068	14.8
		Rework	115	252	-	12	2.2	.104	9.6
		Total	573	3,550	-	43	6.2	.075	13.3
Allegheny	Regular	Initial	1,746	153,033	8	414	87.6	.237	4.2
		Rework	3,571	47,921	-	505	13.4	.141	7.1
		Total	5,317	200,954	8	919	37.6	.173	5.6
	C.C.C.	Initial	3,703	665,798	22	2,787	179.8	.753	1.3
		Rework	669	68,533	-	521	102.5	.779	1.3
		Total	4,372	734,336	22	3,308	168.0	.757	1.3
	Total	Initial	5,449	818,831	30	3,201	150.3	.587	1.7
		Rework	4,240	116,509	-	1,026	27.5	.242	4.1
		Total	9,689	935,340	30	4,227	96.5	.436	2.3
Total	Regular	Initial	9,753	340,159	8	1,076	34.9	.110	9.1
		Rework	12,332	67,541	-	862	5.5	.070	14.3
		Total	22,085	407,700	8	1,938	18.5	.088	11.4
	C.C.C.	Initial	5,653	1,299,664	107	5,112	229.9	.904	1.1
		Rework	4,468	378,109	-	2,221	84.6	.497	2.0
		Total	10,121	1,677,773	107	7,333	165.8	.724	1.4
	Total	Initial	15,406	1,639,823	115	6,188	106.4	.402	2.5
		Rework	16,800	445,650	-	3,083	26.5	.184	5.4
		Total	32,206	2,085,473	115	9,271	64.8	.288	3.5

In addition to the 458 acres of initial work listed for the Green Mountain National Forest, 115 acres on this forest were initially cleared of ribes in connection with work on state and privately-owned lands prior to acquisition by the Government. The gross acreages worked on the White Mountain and Allegheny National Forests are somewhat greater than the present net control areas on these forests due to the discontinuance of several units from the control area during 1944-1946.



Table 26 - Expenditures For Blister Rust Control on National Forests  
1924-1947, Inclusive

Agency	White Mountain National Forest	Green Mountain National Forest	Allegheny National Forest	Total
Forest Service	\$4,187.60	\$292.65	\$3,909.77	\$8,390.02
B.E. & P.Q.	7.58	20.38	429.13	457.09
B.P.I.	75.63	-	207.85	283.48
State	357.61*	-	65.60**	423.21
C.C.C.	8,096.47	-	7,128.69	15,225.16
Total	\$12,724.89	\$313.03	\$11,741.04	\$24,778.96

\*New Hampshire

\*\*Pennsylvania

Costs listed in Table 26 do not include any charges for supervisory activities of employees of the Forest Service, Bureau of Plant Industry, and Bureau of Entomology and Plant Quarantine. The C.C.C. costs were computed on an arbitrary basis for the time the enlisted men actually spent on the project, actual cost of technical foreman, and estimated costs of transportation for the entire C.C.C. personnel assigned to the work.



BLISTER RUST CONTROL ON NATIONAL PARKS IN NORTHEASTERN REGION  
FINANCIAL PROJECT BLR-5

Control activities in cooperation with the National Park Service in this region during recent years has been restricted to a project at Acadia National Park on Mount Desert Island in Maine where white pine is of special importance from a scenic viewpoint. Heavy blister rust infection was general throughout the white pine areas on this park when control activities were initiated in 1929, but field studies and general observations have shown that the ribes eradication work since that time has been most effective in controlling the disease. Damage resulting from early infection to the older and larger pines, which die very slowly from the disease, has been increasingly apparent during recent years. However, very little new infection occurred on the pines after the areas were cleared of ribes as evidenced by the presence of excellent white pine reproduction free of blister rust in many of the areas. The effectiveness of the control work is also indicated by the small amount of ribes regrowth found on the second and third workings. The entire control area, now comprising 16,872 acres, has been classified as being on a maintenance basis since 1945 and conditions are such that no ribes eradication work is deemed necessary at least during 1948 and 1949. However, the future blister rust control problem on this park has been complicated by the devastating forest fire in October, 1947 which burned over nearly 16,000 acres of forest land on Mount Desert Island and caused millions of dollars damage to real estate. Planimetered acreages, computed from the permanent control area map, show the following data for the burned area on Acadia National Park:

<u>Township</u>	<u>Total Acreage of Control Area</u>	<u>Acreage Burned</u>	<u>% Control Area Burned</u>
Bar Harbor	9,157	8,181	89.3
Mount Desert	6,564	419	6.4
Southwest Harbor	1,151	0	0
<b>Total</b>	<b>16,872</b>	<b>8,600</b>	<b>51.0</b>

As indicated above, the major portion of the control area which was burned over on the park is located in Bar Harbor township. These areas contained some of the most valuable white pine. Restocking of pine in the burned tracts is dependent on many factors. Ecological studies have shown that burned areas may restock heavily to ribes. However, it will be at least three years before reliable information can be obtained on the amount of white pine and ribes regeneration in the burned areas at Acadia Park. If any planting of white pine is contemplated, it should be delayed until the third year after salvage operations in the burned areas because of the risk of damage from pales weevil. Any areas to be planted to white pine should also be examined for ribes regrowth in advance.

Technical supervision of the 1947 control activities at Acadia Park was provided by the district blister rust control leader located at Belfast, Maine. He assisted the park superintendent in planning the work, training the personnel, inspecting field operations, and in maintaining pertinent maps and records.



### Ribes Eradication Work During Calendar Year 1947

The Park Service employed one checker and a laborer on ribes scouting work during the period May 5 to September 11, 1947. These men systematically examined the most likely ribes sites in eight control units, comprising 4,484 acres, which included all of the areas scheduled for 1947. No work had been performed on any of the units for at least five years, and 1,256 acres had been worked only once previously. A total of only 647 wild ribes, or an average of 0.14 bushes per acre were located and destroyed on the 4,484 acres scouted during 1947. This work required a total of 110 man days labor and resulted in a production rate of 40.8 acres per man day as compared with 31.7 acres per man day for similar scouting work in 1946, and 9.6 acres per man day in 1945 when one checker and a five-man crew were assigned to the project.

Table 27 - Ribes Eradication Work at Acadia National Park - 1947

Type of Work	Acreage Worked	No. Ribes Destroyed	Total Man Days	Per Acre		Acres Worked Per Man Day
				Ribes	Man Days	
Second	1,256	40	32	0.03	.025	39.2
Third	3,228	607	78	0.19	.024	41.4
Total	4,484	647	110	0.14	.025	40.8

### Blister Rust Canker Elimination Work During 1947

The blister rust canker elimination project which was in progress at the end of 1946 was continued until May 4, 1947, but due to inclement weather the two men assigned to such activities lost considerable time. Work was not completed in the Old Farm area until March 18th and the men spent the balance of their time until May 5th cutting out cankers in the larger group of old white pines in the developed part of the Bear Brook picnic area. The results of such activities during the period December 29, 1946 to May 4, 1947, inclusive, were as follows:

Total number of pines examined.....	538
Number fatally infected pines cut down.....	78
Number pines treated for infection.....	245
Number cankers removed { Branch.....	691
{ Stem.....	75*
Total man days.....	126

\*Includes stem-cankered tops cut off from 42 large pines

Chief Forester Coffman and Forester Savage, of the National Park Service, visited Bar Harbor during May and conferred with Superintendent Hadley and District Leader Bradbury concerning future blister rust canker elimination work at Acadia Park. It was decided to discontinue this phase of the blister rust control program.



### Expenditures During Calendar Year 1947

According to information obtained from the Bar Harbor Office, Park Service expenditures for blister rust control during the period December 29, 1946 to September 30, 1947 were as follows:

<u>Project</u>	<u>Recess</u>	<u>Expenditure</u>	<u>Total</u>
Blister Rust Canker Elimination	\$959.87	\$39.64	\$999.51
Ribes Scouting	1,379.02	19.22	1,398.24
<u>Total</u>	<u>\$2,338.89</u>	<u>\$58.86</u>	<u>\$2,397.75</u>

There was an unobligated balance of \$300.32 in the blister rust control appropriation for the fiscal year 1948 as of September 30, 1947. Since no control work is planned for the spring of 1948, this balance apparently can be released for use elsewhere.

### Status of Ribes Eradication Work at Acadia National Park December 31, 1947

Total acreage of present net control area.....	16,872
Estimated acreage of white pine in net control area.....	3,200
(First work.....)	16,872
Acreage worked (Second work.....)	16,872
(Third work.....)	8,207
Acreage now on maintenance.....	16,872
(Worked once.....)	100.0
Percentage of net control area (Worked twice.....)	100.0
(Worked three times.....)	48.6
(On Maintenance.....)	100.0

### Recommendations For Future Control Work

No control work is recommended at Acadia Park during the calendar years 1948 and 1949.

Funds should be made available during the fiscal year 1950 to make a careful survey starting in May, 1950 to obtain information on white pine and ribes regeneration on the 8,600 acres of Park land burned over during October, 1947 in the townships of Bar Harbor and Mount Desert. An estimate of the cost of such a survey and a plan outlining the proposed procedure will be submitted to the Park Service officials in due time.



Table 28 - Ribes Eradication Work at Acadia National Park  
1929-1947, Inclusive

Program	Type of Work	Gross Acreage Reported Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Regular	First	7,726	503,920	-	2,798	65.2	.36	2.8
	Second	8,732	24,165	1	886	2.8	.10	9.9
	Third	8,207	6,100	1	656	0.7	.08	12.5
	Total	24,665	534,185	2	4,340	21.7	.18	5.7
C.C.C.	First	12,990	390,020	293	8,429	30.0	.65	1.5
	Second	9,427	35,191	-	3,564	3.7	.38	2.6
	Total	22,417	425,211	293	11,993	19.0	.53	1.9
All	First	20,716	893,940	293	11,227	43.2	.54	1.8
	Second	18,159	59,356	1	4,450	3.3	.25	4.1
	Third	8,207	6,100	1	656	0.7	.08	12.5
	Total	47,082	959,396	295	16,333	20.4	.35	2.9

Table 29 - Blister Rust Canker Elimination Work at Acadia National Park  
 (Work performed during period 1932-1939, inclusive, 1946, and 1947)

Program	Total No. Pines Examined	No. Infected Pines Cut Down	No. Infected Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days
				Branch	Stem	
Regular	3,311	419	1,045	2,421	170	299
C.C.C.	58,261	2,957	8,879	27,054	2,691	2,177
All	61,572	3,376	9,924	29,475	2,861	2,476

Table 30 - Total Expenditures For Blister Rust Control at Acadia National Park  
1929-1947, Inclusive

Park Service	Bureau of Plant Industry	C.C.C.	Total
\$23,593.51	\$3,145.83	\$29,880.36	\$56,619.70

The costs for the control project at Acadia National Park do not include any charges for the supervisory activities of employees of the Park Service, Bureau of Plant Industry, and Bureau of Entomology and Plant Quarantine.

The C.C.C. costs were computed on the basis of arbitrary charges for the time enlisted men spent on the project, actual cost of technical foremen and checkers, and estimated costs of transportation for all C.C.C. personnel assigned to the project.



PART VI

APPENDIX

<u>Informational and Service Activities</u>	<u>Page</u>
By States, 1923-1947.....	57
<u>Local Cooperation</u>	
By States During 1947.....	58
By States, 1918-1947.....	58
<u>Control Area Mapping</u>	
By States During 1947.....	59
By States, 1933-1947.....	59
By Programs, 1933-1947.....	60
Status on December 31, 1947.....	60
<u>Ribes Eradication</u>	
By States and Land Ownership Classes During 1947.....	61-62
Maintenance Work By States During 1947 and 1946-1947.....	63-64
By States, 1918-1947.....	65
By Programs, 1918-1947.....	66
By Land Ownership Classes, 1918-1947.....	67
Status on December 31, 1947 by States and Land Ownership Classes.....	68
<u>Status of Blister Rust Control Work</u>	
By States and Districts - December 31, 1947.....	69
<u>Nursery Sanitation</u>	
By States During 1947.....	70
By States, 1930-1947.....	70
By Programs, 1930-1947.....	71
Status on December 31, 1947.....	71
List of Nurseries Maintaining Sanitation Zones.....	72-73
<u>Ribes Nigrum Elimination</u>	
By States, 1928-1947.....	74
By Programs, 1928-1947.....	74
Status on December 31, 1947.....	74
<u>Cultivated Ribes Compensation</u>	
By States, 1918-1947.....	75
<u>Blister Rust Canker Elimination</u>	
By States During 1947.....	75
By States and Programs, 1932-1947.....	76
By Land Ownership Classes, 1932-1947.....	76
<u>Total Expenditures for Blister Rust Control</u>	
All Agencies, by States, During Calendar Year 1947.....	77
All Agencies, by States, 1918-1947, Inclusive.....	78



**Table 31 - Informational and Service Activities of Permanent and Temporary District Leaders During Period 1923-1947, Inclusive**

**Informational Activities**

State	Meetings Addressed		Items Published	Displays Placed
	No.	Attendance		
Maine	1,383	38,189	620	1,112
N. H.	3,825	222,816	4,477	2,186
Vt.	1,088	38,405	694	933
Mass.	1,075	52,517	2,176	877
R. I.	273	20,646	406	134
Conn.	130	4,926	646	168
N. Y.	2,165	175,006	2,935	828
Penna.	33	3,520	43	81
All States	9,972	556,025	12,004	6,319

**Service Activities**

State	Initial Interviews	Follow-up Calls	Persons Instructed In Field
Maine	35,510	14,298	22,489
N. H.	41,803	41,757	23,685
Vt.	16,091	12,501	10,474
Mass.	38,169	13,546	12,639
R. I.	3,946	3,288	726
Conn.	5,547	3,777	1,798
N. Y.	39,037	29,268	27,273
Penna.	2,292	466	2,661
All States	182,395	118,901	101,745



Table 32 - Local Cooperation on Blister Rust Control Work During 1947

State	Individual Cooperation		Town Cooperation			County Cooperation			Value of Additional Contributed Services
	No. Cooperators (all on Ribes erad.)	Amount Spent By Individual Cooperators	Appropriations		Amount Town Money Expended	Appropriations			
			No.	Amount		No.	Amount Approp.	Amount Expended	
Maine	-	-	53*	\$10,150.00	\$9,190.36	-	-	-	-
N. H.	-	-	92**	34,624.53	31,295.53	-	-	-	-
Vt.	1	\$4.00	29	5,900.00	5,679.03	-	-	-	-
Mass.	33	5,965.34	-	-	-	-	-	-	-
Conn.	4	337.31	13	1,935.09	1,677.30	-	-	-	-
N. Y.	2	1,287.50	-	-	-	13	\$16,325.00	\$15,631.81	\$1255.00
All States	40	\$7,594.15	187	52,609.62	\$47,842.22	13	\$16,325.00	\$15,631.81	\$1255.00

\*Includes 8 appropriations totalling \$1200. carried over from 1946.

\*\*Includes 19 appropriations totalling \$3509.28 carried over from 1946 and 22 compulsory appropriations amounting to \$7565.25.

Table 33 - Local Cooperation on Blister Rust Control Work, 1918-1947, Inclusive

State	Individual Cooperation			Town Cooperation			County Cooperation		
No. Cooperators	Ribes Erad.	Canker Elimin.	Amount Spent By Individual Cooperators	Appropriations	No. Town	Contributions	Amount Town Money Expended	No. County Allotments or Appropriations	Amount Spent by Counties
Maine	11,104	25	\$85,354.48	1,041	20	20	\$171,398.56	-	-
N. H.	693	-	49,032.17	1,689	20	20	499,368.14	6	\$1,724.05
Vt.	2,354	12	75,135.74	137	64	59	48,678.70	-	-
Mass.	21,892	-	111,957.78	4	59	59	24,266.24	-	-
R. I.	8	-	581.36	-	-	-	-	-	-
Conn.	513	-	10,555.90	117	51	51	31,420.36	-	-
N. Y.	5,978	1	176,636.19	29	3	3	9,422.78	102	115,259.99
Penn.	303	-	2,273.36	-	-	-	-	-	-
All States	42,845	38	511,526.98	3,017	217	217	784,554.78	108	116,964.07



Table 34 - Control Area Mapping Work During 1947

State	Acreage in Control Area			Additional Acreage Examined But Not Mapped			Total Man Days
	Initially Mapped	Remapped	Total	Inside Control Area	Outside Control Area	Total	
Maine	59,640	39,677	99,317	7,510	74,592	82,102	541
N. H.	153,344	13,256	166,600	76,350	123,893	200,243	1402
Vt.	10,089	7,415	17,504	100,170	20,802	120,972	447
Mass.	30,885	60,350	91,235	10,739	51,017	61,756	353
R. I.	-	20,412	20,412	50,244	-	50,244	153
Conn.	-	22,836	22,836	-	63,562	63,562	325
N. Y.	65,082	46,480	111,562	634,193	656,462	1,290,660	5685
Penna.	10,081	44,854	54,935	102,304	14,232	116,536	211
All States	329,121	255,282	584,403	981,515	1,004,560	1,986,075	9117

Table 35 - Control Area Mapping During Period 1933-1947, Inclusive  
By States

State	Total Acreage Reported Mapped*	Net Acreage Detail Mapped in Present Control Area	Additional Acreage Examined But Not Mapped	Miles Control Area Boundary Lines Painted***	Total Man Days
Maine	2,434,666	2,155,278	4,884,851	1,808½	38,433
N. H.	1,737,418	1,494,652	658,697	-	44,714
Vt.	1,696,251	692,857	4,296,506	828	24,130
Mass.	1,186,994	1,010,350	1,402,547	1,290	21,674
R. I.	277,470	115,707	113,830	-	2,764
Conn.	853,699	465,803	2,765,929	3,202½	26,519
N. Y.	4,552,867	1,979,162	4,727,807	2,403½	54,051
Penna.	942,995	656,714	198,319**	7,369	45,578
All States	13,682,360	8,570,523	19,048,486	16,901	257,863

\*This acreage includes a large amount of remapping, especially in Vermont, Connecticut and New York. It also includes areas which were mapped and subsequently discontinued from the control area.

\*\*Several hundred thousand additional acres of non-pine land were also examined but not mapped in Pennsylvania - no record was kept of this acreage.

\*\*\*No record kept of this item after 1945.



Table 36 - Control Area Mapping During Period 1933-1947, Inclusive  
By Programs

Program	Total Acreage Reported Mapped	Acreage Examined But Not Mapped	Miles Control Area Boundary Lines Painted	Total Man Days
Regular Cooperative	1,782,566	3,991,139	44	21,966
C.C.C.	999,838	364,002	2630	38,265
P.W.A.	744,663	942,528	227	6,915
W.P.A. (F.A.)	9,239,070	11,177,457	10,678 1/2	159,244
W.P.A. (State)	656,491	399,852	3,361 1/2	26,676
E.R.A.	213,971	2,139,370	-	4,205
C.W.A.	45,761	34,138	-	592
All Programs	13,682,360	19,048,486	16,901	257,863

Table 37 - Status of Control Area Mapping Work, December 31, 1947

State	Total Acreage of Net Control Area	Acreage Detail Mapped in Net Control Area	% Net Control Area Detail Mapped
aine	2,477,299	2,155,278	87.0
. H.	2,956,721	1,494,652	50.6
t.	710,044	692,857	97.6
ass.	1,628,111	1,010,350	62.1
. I.	130,111	115,707	88.9
onn.	465,803	465,803	100.0
. Y.	2,833,343	1,979,162	69.9
. J.	16,742	0	0
enna.	706,271	656,714	93.0
All tates	11,924,445	8,570,523	71.9



Table 38 - Ribes Eradication Work During 1947 By States and Land Ownership Classes  
Initial Control Work

State	Land Ownership Class	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	State & Private	24,168	113,867	38	993	4.7	.04	24.3
	White Mt. Nat. Forest	658	1,247	-	69	1.9	.10	9.5
	Total	24,826	115,114	38	1062	4.6	.04	23.4
N. H.	All State & Private	26,049	202,424	-	2724	7.8	.10	9.6
Vt.	State & Private	37,951	224,614	36	2431	5.9	.06	15.6
	Green Mt. Nat. Forest	320	2,953	-	22	9.2	.07	14.5
	Total	38,271	227,567	36	2453	5.9	.06	15.6
Mass.	All State & Private	25,026	67,548	1,015	1214	2.7	.05	20.6
N. Y.	"	80,911	884,081	1,633	8252	10.9	.10	9.8
Penna.	State & Private	23,664	212,398	433	2578	9.0	.11	9.2
	Allegheny Nat. Forest	535	17,281	-	143	32.3	.27	3.7
	Total	24,199	229,679	433	2721	9.5	.11	8.9
All States	State & Private	217,769	1,704,932	3,155	18,192	7.8	.084	12.0
	National Forests	1,513	21,481	-	234	14.2	.155	6.5
	Total	219,282	1,726,413	3,155	18,426	7.9	.084	11.9

Second Workings

Maine	State & Private	112,637	389,381	3,905	4,780	3.5	.04	23.6
	White Mt. Nat. Forest	87	151	-	3	1.7	.03	29.0
	Acadia Nat. Park	1,256	40	-	32	0.03	.025	39.2
	Total	113,980	389,572	3,905	4,815	3.4	.04	23.7
N. H.	All State & Private	68,311	277,066	81	5,239	4.1	.08	13.0
Vt.	"	28,765	117,892	88	1,741	4.1	.06	16.5
Mass.	"	43,154	113,051	368	2,580	2.6	.06	16.7
R. I.	"	5,221	2,712	74	153	0.5	.03	34.1
Conn.	"	184	158	-	4	0.9	.02	46.0
N. Y.	"	192,406	731,749	593	9,512	3.8	.05	20.2
Penna.	State & Private	25,654	133,128	555	1,945	5.2	.08	13.2
	Allegheny Nat. Forest	1,281	2,539	-	48	2.0	.04	26.7
	Total	26,935	135,667	555	1,993	5.0	.07	13.5
All States	State & Private	476,332	1,765,137	5,664	25,954	3.7	.054	18.4
	National Forests	1,368	2,690	-	51	2.0	.037	26.8
	National Park	1,256	40	-	32	0.03	.025	39.2
	Total	478,956	1,767,867	5,664	26,037	3.7	.054	18.4



Table 38 (Continued) - Ribes Eradication Work During 1947 By States and Land Ownership Class  
Third and Other Workings

State	Land Ownership Class	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acreage Worked Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	State & Private	21,983	26,957	4	572	1.2	.03	38.4
	White Mt. Nat. Forest	42	129	-	3	3.1	.07	14.0
	Acadia Nat. Park	3,228	607	-	78	0.2	.02	41.4
	Total	25,253	27,693	4	653	1.1	.03	38.7
N. H.	All State & Private	13,790	87,065	15	1,443	6.3	.10	9.6
Vt.	"	2,974	13,483	-	209	4.5	.07	14.2
Mass.	"	3,883	28,552	319	271	7.4	.07	14.3
R. I.	"	15,191	2,281	92	262	0.15	.02	56.0
Conn.	"	28,118	65,013	-	864	2.3	.03	32.5
N. Y.	"	165,670	317,067	120	6,557	1.9	.04	25.3
Penna.	State & Private	14,582	18,997	400	998	1.3	.07	14.6
	Allegheny Nat. Forest	652	3,164	-	58	4.9	.09	12.2
	Total	15,234	22,161	400	1,056	1.5	.07	14.4
All States	State & Private	266,191	559,415	950	11,176	2.1	.042	23.8
	National Forests	694	3,293	-	61	4.7	.085	11.4
	National Park	3,228	607	-	78	0.2	.024	43.4
	Total	270,113	563,315	950	11,315	2.1	.042	23.9

All Work

Maine	State & Private	158,788	530,205	3,947	6,345	3.3	.04	25.0
	White Mt. Nat. Forest	787	1,527	-	75	1.9	.10	10.5
	Acadia Nat. Park	4,484	647	-	110	0.1	.25	40.8
	Total	164,059	532,379	3,947	6,530	3.2	.04	25.1
N. H.	All State & Private	108,150	566,555	96	9,406	5.2	.09	11.5
Vt.	State & Private	69,690	355,989	124	4,381	5.1	.06	15.9
	Green Mt. Nat. Forest	320	2,953	-	22	9.2	.07	14.5
	Total	70,010	358,942	124	4,403	5.1	.06	15.9
Mass.	All State & Private	72,063	209,151	1,702	4,065	2.9	.06	17.7
R. I.	"	20,412	4,993	166	415	0.2	.02	49.2
Conn.	"	28,302	65,171	-	868	2.3	.03	32.6
N. Y.	"	438,987	1,932,897	2,346	24,321	4.4	.06	16.0
Penna.	State & Private	63,900	364,523	1,388	5,521	5.7	.09	11.6
	Allegheny Nat. Forest	2,468	22,984	-	249	9.3	.19	9.9
	Total	66,368	387,507	1,388	5,770	5.8	.09	11.5
All States	State & Private	960,292	4,029,484	9,769	55,322	4.2	.058	17.4
	National Forests	3,575	27,464	-	346	7.7	.097	20.1
	National Park	4,484	647	-	110	0.1	.024	40.8
	Total	968,351	4,057,595	9,769	55,778	4.2	.058	17.4



Table 39 - Bibes Eradication Work on Maintenance Areas During 1947

State	Land Ownership Class	Type of Work	Acreage Worked	No. Bibes Destroyed		Total Man Days	Per Acre		Acres Per Man Day
				Wild & Cult.	Cult. Only		Bibes	Man Days	
Maine	State & Private	All							
		Second	3,364	1,528	-	71	0.5	.02	47.4
	Acadia National Park	Second	1,256	40	-	32	0.03	.03	39.2
		Other	3,228	607	-	78	0.2	.02	41.4
		Total	4,484	647	-	110	0.1	.02	40.8
	Total	Second	4,620	1,868	-	103	0.4	.02	44.9
		Other	3,228	607	-	78	0.2	.02	41.4
		Total	7,848	2,475	-	181	0.3	.02	43.4
R. I.	All State & Private	Second	5,221	2,712	74	153	0.5	.03	34.1
		Other	15,191	2,281	92	262	0.15	.02	58.0
		Total	20,412	4,993	166	415	0.2	.02	49.2
Conn.	"	Second	184	158	-	4	0.9	.02	46.0
		Other	28,118	65,013	-	864	2.3	.03	32.5
		Total	28,302	65,171	-	868	2.3	.03	32.6
N. Y.	"	Second	3,270	3,503	9	104	1.1	.03	31.4
		Other	32,358	44,867	14	1,203	1.4	.04	26.9
		Total	35,628	48,370	23	1,307	1.4	.04	27.3
Penna.	"	Second	1,103	5,865	-	114	5.3	.10	9.7
		Other	416	1,305	-	34	3.1	.08	12.2
		Total	1,519	7,170	-	148	4.7	.10	10.3
All States	State & Private	Second	13,142	14,066	83	446	1.1	.03	29.5
		Other	76,083	113,466	106	2,363	1.5	.03	32.2
		Total	89,225	127,532	189	2,809	1.4	.03	31.8
	Acadia National Park	Second	1,256	40	-	32	0.03	.03	39.2
		Other	3,228	607	-	78	0.2	.02	41.4
		Total	4,484	647	-	110	0.1	.02	40.8
	Total	Second	14,398	14,106	83	478	1.0	.03	30.1
		Other	79,311	114,073	106	2,441	1.4	.03	32.5
		Total	93,709	128,179	189	2,919	1.4	.03	32.1



Table 40 - Ribes Eradication Work on Maintenance Areas - 1946 and 1947  
(No separate record kept of such work prior to 1946)

State	Land Ownership Class	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Per Man Day
				Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	State & Private	All Second	3,364	1,825	-	71	0.5	.02	47.4
		Second	5,601	555	-	169	0.1	.03	33.1
	Acadia National Park	Other	3,228	607	-	78	0.2	.02	41.4
		Total	8,829	1,162	-	247	0.1	.03	35.7
	Total	Second	8,965	2,383	-	240	0.3	.03	37.4
		Other	3,228	607	-	78	0.2	.02	41.4
		Total	12,193	2,990	-	318	0.2	.03	35.3
I.	All State & Private	Second	12,707	4,617	74	404	0.4	.03	31.5
		Other	20,260	3,914	92	441	0.2	.02	45.9
		Total	32,967	8,531	166	845	0.3	.03	39.0
Conn.	"	Second	184	158	-	4	0.9	.02	45.0
		Other	73,761	103,906	-	2,073	1.4	.03	35.6
		Total	73,945	104,064	-	2,077	1.4	.03	35.6
Y.	"	Second	5,075	6,284	9	238	1.2	.05	21.3
		Other	48,298	72,595	14	1,949	1.5	.04	24.8
		Total	53,373	78,879	23	2,187	1.5	.04	24.4
Vt.	"	Second	2,742	6,594	-	258	2.4	.09	10.6
		Other	416	1,305	-	34	3.1	.08	12.2
		Total	3,158	7,899	-	292	2.5	.09	10.8
All States	State & Private	Second	24,072	19,481	83	975	0.8	.04	24.7
		Other	142,735	181,750	106	4,497	1.3	.03	31.7
		Total	166,807	201,231	189	5,472	1.2	.03	30.5
	Acadia National Park	Second	5,601	555	-	169	0.1	.03	33.1
		Other	3,228	607	-	78	0.2	.02	41.4
		Total	8,829	1,162	-	247	0.1	.03	35.7
	Total	Second	29,673	20,036	83	1,144	0.7	.04	25.9
		Other	145,963	182,357	106	4,575	1.2	.03	31.9
		Total	175,636	202,393	189	5,719	1.1	.03	30.7



Table 41 - Ribes Eradication Work, 1918-1947, Inclusive  
By States

State	Type of Work	Gross Acreage Reported	Gross Acreage Worked	No. of Ribes Destroyed (Wild & Cult.)	Total Man Days	Per Acre		Acres Worked Per Man Day
						Ribes	Man Days	
Maine	First	2,489,693		47,091,167	260,720	15.9	.105	9.5
	Second	1,112,866		14,252,699	154,708	12.8	.139	7.2
	Other	74,840		262,127	3,122	3.5	.042	24.0
	Total	3,677,399		61,605,993	418,550	16.8	.114	8.8
N. H.	First	3,248,707		57,450,700	307,883	17.7	.095	10.6
	Second	1,040,228		12,740,273	123,941	12.2	.119	8.4
	Other	80,666		425,438	9,419	5.3	.117	8.6
	Total	4,369,601		70,616,411	441,243	16.2	.101	9.9
Vt.	First	567,147		12,426,263	127,466	21.9	.225	4.4
	Second	222,217		3,106,764	47,953	14.0	.216	4.6
	Other	18,959		102,069	2,668	5.4	.141	7.1
	Total	808,323		15,635,096	178,087	19.3	.220	4.5
Mass.	First	2,092,055		16,922,936	131,435	8.1	.063	15.9
	Second	1,171,315		6,030,002	96,852	5.1	.083	12.1
	Other	124,847		201,220	5,062	1.6	.041	24.7
	Total	3,388,217		23,154,158	233,349	6.8	.069	14.5
R. I.	First	330,050		269,502	21,251	0.8	.064	15.5
	Second	315,111		377,557	53,704	1.2	.170	5.9
	Other	47,776		14,950	2,435	0.3	.051	19.6
	Total	692,937		662,009	77,390	0.96	.112	9.0
Conn.	First	444,293		2,496,108	39,773	5.6	.090	11.2
	Second	446,647		4,888,040	92,929	10.9	.208	4.8
	Other	153,389		207,422	5,550	1.4	.036	27.6
	Total	1,044,329		7,591,570	138,252	7.3	.132	7.6
N. Y.	First	2,797,898		65,127,269	714,454	23.3	.255	3.9
	Second	1,519,307		12,572,071	215,373	8.3	.142	7.1
	Other	595,739		1,515,659	30,572	2.5	.051	19.5
	Total	4,912,944		79,214,999	960,399	16.1	.195	5.1
N. J.	First	16,742		49,493	1,324	3.0	.079	12.6
	Second	1,417		16,971	392	12.0	.277	3.6
	Total	18,159		66,464	1,716	3.7	.094	10.6
Penn.	First	711,377		33,780,446	331,850	47.5	.466	2.1
	Second	252,475		5,694,933	158,844	22.6	.629	1.6
	Other	46,624		251,909	3,736	5.4	.080	12.5
	Total	1,010,476		39,727,288	494,430	39.3	.489	2.0
All States	First	12,697,962		235,613,884	1,936,156	18.6	.152	6.6
	Second	6,081,583		59,679,310	944,696	9.8	.155	6.4
	Other	1,142,840		2,980,794	62,564	2.6	.055	18.3
	Total	19,922,385		298,273,988	2,943,416	15.0	.148	6.8

The data for Table 41 were compiled from the state leaders' annual statistical reports. In 1937 and 1942, certain adjustments were made in the acreage figures for Maine, Vermont and Connecticut in order to make the data agree with the permanent CO-105 records.



Table 42 - Ribes Eradication Work, 1915-1947, Inclusive  
By Program

Program	Type of Work	Gross Acreage Reported Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acrea Worked Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Regular Cooperative	Initial	9,034,387	111,338,343	622,418	733,296	12.3	.061	12.3
	Rework	4,235,161	19,792,635	38,740	259,195	4.7	.061	16.3
	Total	13,269,548	131,130,978	661,158	992,491	9.9	.075	13.4
C.C.C.	Initial	1,379,998	49,844,058	75,026	683,975	36.1	.496	2.0
	Rework	1,200,607	16,712,360	18,368	453,740	13.9	.378	2.6
	Total	2,580,605	66,556,418	93,394	1,137,715	25.8	.441	2.3
S.C.S.	Initial	20,451	651,804	360	9,944	31.9	.486	2.1
	Rework	10,120	18,830	-	2,485	1.9	.246	4.1
	Total	30,571	670,634	360	12,429	21.9	.407	2.5
W.P.A. (F.A.)	Initial	1,927,319	64,062,297	85,141	455,305	33.2	.236	4.2
	Rework	1,479,148	23,786,417	32,843	258,265	16.1	.175	5.7
	Total	3,406,467	87,848,714	117,984	713,570	25.8	.209	4.8
W.P.A. (State)	Initial	90,665	1,757,703	2,892	11,827	19.4	.130	7.7
	Rework	154,784	797,288	2,427	13,310	5.2	.086	11.6
	Total	245,449	2,554,991	5,319	25,137	10.4	.102	9.8
P.W.A.	Initial	179,970	7,646,550	7,297	33,419	42.5	.186	5.4
	Rework	162,541	1,373,778	5,379	16,156	8.5	.099	10.1
	Total	342,511	9,020,328	12,676	49,575	26.3	.145	6.9
C.W.A. & E.R.A.	Initial	20,547	175,737	1,600	4,500	8.6	.219	4.6
	Rework	7,704	158,892	306	3,270	20.6	.424	2.4
	Total	28,251	334,629	1,906	7,770	11.8	.275	3.6
A.R.A.	Initial	10,639	113,439	948	3,564	10.7	.335	3.0
	Rework	5,714	13,889	110	772	2.4	.135	7.4
	Total	16,353	127,328	1,058	4,336	7.8	.265	3.8
N.Y.A.	Initial	373	4,280	-	85	11.5	.228	4.4
	Rework	555	4,741	-	31	8.5	.056	17.9
	Total	928	9,021	-	116	9.7	.125	8.0
N.V.S.	Initial	1,416	19,673	65	241	13.9	.170	5.9
	Rework	286	1,274	54	36	4.5	.126	7.9
	Total	1,702	20,947	119	277	12.3	.163	6.1
All Programs	Initial	12,665,765	235,613,884	795,747	1,936,156	18.6	.153	6.5
	Rework	7,256,620	62,660,104	98,227	1,007,260	8.6	.139	7.2
	Total	19,922,385	298,273,988	893,974	2,943,416	15.0	.148	6.8

In Table 42, summarizing the ribes eradication work by programs, it was not possible to make the adjustments in the gross acreages reported worked, which are indicated for Table 41.

In Table G (Page 38 of the 1947 annex tables) the data for the "Regular and Cooperative Program" include work under the A.R.A. Program as well as the Regular Cooperative Program as shown in Table 42 above.



Table 43 - Ribes Eradication Work, 1913-1947, Inclusive  
By Land Ownership Classes

Ownership Class		Type of Work	Gross Acreage Reported Worked	No. Ribes Destroyed (Wild & Cult.)	Total Man Days	Per Acre		Acres Worked Per Man Day
						Ribes	Man Days	
State and Privately Owned Lands		First	12,657,040	233,005,121	1,917,423	18.4	.151	6.6
		Second	6,052,750	59,201,964	937,660	9.8	.155	6.5
		Other	1,128,507	2,947,034	61,411	2.6	.054	18.4
		Total	19,838,297	295,154,119	2,916,494	14.9	.147	6.8
National Forests	White Mountain	First	9,499	817,694	2,956	86.1	.311	3.2
		Second	7,633	318,242	1,831	41.7	.240	4.2
		Other	4,812	10,647	214	2.2	.044	22.5
		Total	21,944	1,146,583	5,001	52.2	.228	4.4
	Green Mountain	First	458	3,298	31	7.2	.068	14.8
		Second	115	252	12	2.2	.104	9.6
		Total	573	3,550	43	6.2	.075	13.3
	Allegheny	First	5,449	818,831	3,201	150.3	.587	1.7
		Second	2,926	99,496	743	34.0	.254	3.9
		Other	1,314	17,013	283	12.9	.215	4.6
		Total	9,689	935,340	4,227	96.5	.436	2.3
	Total	First	15,406	1,639,823	6,188	106.4	.402	2.5
		Second	10,674	417,990	2,586	39.2	.242	4.1
		Other	6,126	27,660	497	4.5	.081	12.3
		Total	32,206	2,085,473	9,271	64.8	.288	3.5
	National Parks	Acadia	First	20,716	893,940	11,227	43.2	.542
Second			18,159	59,356	4,450	3.3	.245	4.1
Other			8,207	6,100	656	0.7	.080	12.5
Total			47,082	959,396	16,333	20.4	.347	2.9
Hickory Run Dev. Area		All						
		First	4,800	75,000	1,318	15.6	.275	3.6
Total		First	25,516	968,940	12,545	38.0	.492	2.0
		Second	18,159	59,356	4,450	3.3	.245	4.1
		Other	8,207	6,100	656	0.7	.080	12.5
		Total	51,882	1,034,396	17,651	19.9	.340	2.9
All Classes		First	12,697,962	235,613,884	1,936,156	18.6	.152	6.6
		Second	6,081,583	59,679,310	944,696	9.8	.155	6.4
		Other	1,142,840	2,980,794	62,564	2.6	.055	18.3
		Total	19,922,385	298,273,988	2,943,416	15.0	.148	6.8



Table 44 - Status of Ribes Eradication Work in Present Net Control Area in Northeastern Region - December 31, 1947

By States

State	Acreage of White Pine in Net Control Area	Total Acreage of Net Control Area	Acreage Worked			Acreage of Initial Work Still To Be Done	Acreage Now Requiring Examination To Determine Need For Re-work	Acreage Now on Maintenance Basis	% Net Control Area	
			First Work	Second Work	Other Workings				Worked Once	Worked Twice On Main-tenance
Maine	968,824	2,477,299	2,223,336	1,137,926	76,683	253,963	1,465,438	585,216	89.7	45.9
N. H.	1,311,112	2,956,721	2,787,516	966,016	77,413	169,205	2,068,927	145,283	94.3	32.7
Vt.	155,871	710,044	499,922	207,226	19,355	210,122	136,333	149,853	70.4	29.2
Mass.	593,997	1,628,111	1,595,129	1,032,960	121,688	32,982	375,347	271,275	98.0	63.4
R. I.	61,204	130,111	130,111	130,111	45,804	0	0	130,111	100.0	100.0
Conn.	85,851	465,803	465,803	311,599	145,848	0	0	465,803	100.0	66.9
N. Y.	826,908	2,833,343	2,411,253	1,459,430	483,997	422,090	788,597	750,828	85.1	51.5
N. J.	3,771	16,742	16,742	1,417	0	0	0	16,742	100.0	8.5
Penn.	136,809	706,271	603,597	158,552	40,554	102,674	374,371	161,065	85.5	22.4
All States	4,144,347	11,924,445	10,733,409	5,405,237	1,011,342	1,191,036	5,209,013	3,696,183	90.0	45.3

By Land Ownership Classes

State and Private Lands										
White Mt.	4,138,742	11,898,776	10,708,185	5,382,124	999,026	1,190,591	5,208,265	3,673,895	90.0	45.2
Green Mt.	1,512	4,679	4,234	3,436	2,795	445	748	2,900	90.5	73.4
Allegheny	89	573	573	115	0	0	0	573	100.0	20.1
Total	2,405	3,545	3,545	2,690	1,314	0	0	1,943	100.0	75.9
State and Federal Lands										
Allegheny	3,200	16,872	16,872	16,872	8,207	0	0	16,872	100.0	100.0
Total	4,144,347	11,924,445	10,733,409	5,405,237	1,011,342	1,191,036	5,209,013	3,696,183	90.0	45.3







TABLE 45- STATUS OF BLISTER RUST CONTROL WORK IN PRESENT NET CONTROL AREA IN NORTHEASTERN REGION BY STATES AND DISTRICTS

(December 31, 1947)

State	District	Total Acreage	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked			Acreage in Control Area			Percentage of Control Area					
					First Working	Second Working	Third Working	Now on Maintenance Basis	Still in Need of First Working	Now Requiring Examination To Determine Need For Rework	Detail Mapped	Worked Once	Worked Twice	Worked Three Times	On Main- tenance Work	Now Needing Examina- tion For Rework
Maine	Bradbury	343,931	91,517	309,156	290,224	126,118	22,696	165,326	53,707	107,641	89.9	84.4	36.7	6.6	48.1	31.3
	Calderara	788,221	314,236	713,250	721,978	383,173	16,650	106,934	66,243	533,477	90.5	91.6	48.6	2.1	13.6	67.7
	Pike	877,061	411,562	666,251	841,512	489,399	18,305	234,380	35,549	564,222	76.0	95.9	55.8	2.1	26.7	64.3
New Hampshire	Waterville (No leader at present)	468,086	151,509	466,621	369,622	139,236	19,032	78,576	98,464	260,098	99.7	79.0	29.7	4.1	16.8	55.6
	Totals For State	2,477,299	968,824	2,155,278	2,223,336	1,137,926	76,683	585,216	253,963	1,465,438	87.0	89.7	45.9	3.1	23.6	59.2
	Baker	550,840	254,034	220,230	531,566	188,925	9,305	41,284	19,274	469,502	40.0	96.5	34.3	1.7	7.5	85.2
Vermont	Boomer	344,950	130,418	344,950	343,465	129,369	6,457	69,617	1,485	171,746	100.0	99.6	37.5	1.9	20.2	49.8
	Codman	221,225	110,631	207,335	207,215	114,034	17,324	49,977	14,010	134,175	93.7	93.7	51.5	7.8	22.6	60.6
	King	780,172	382,610	327,829	748,689	258,568	24,664	102,859	31,483	536,359	42.0	96.0	33.1	3.2	13.2	68.7
Mass.	Newman	705,573	289,162	151,572	664,787	186,558	13,698	146,208	40,786	505,069	21.5	94.2	26.4	1.9	20.7	71.6
	Richardson	353,961	144,257	242,736	291,794	88,562	5,965	55,344	62,167	252,076	68.6	82.4	25.0	1.7	15.6	71.2
	Totals For State	2,956,721	1,311,112	1,494,652	2,787,516	966,016	77,413	465,289	169,205	2,068,927	50.6	94.3	32.7	2.6	15.7	70.0
R. I.	Mulholland	225,378	45,875	225,318	135,829	76,812	3,961	14,113	89,549	61,779	99.9	60.3	34.1	1.8	6.3	27.4
	Palmer	192,982	44,658	191,902	137,626	35,115	4,425	71,068	55,356	40,125	99.4	71.3	18.2	2.3	36.8	20.8
	Rose	291,684	65,338	275,637	226,467	95,299	10,969	64,672	65,217	34,429	94.5	77.6	32.7	3.8	22.2	11.8
Conn.	Totals For State	710,044	155,871	692,857	499,922	207,226	19,355	149,853	210,122	136,333	97.6	70.4	29.2	2.7	21.1	19.2
	Brockway	812,204	314,823	420,669	806,218	576,017	22,193	697,123	5,986	93,620	51.8	99.3	70.9	2.7	85.8	11.5
	Doore	434,296	128,594	348,390	431,127	355,611	95,384	242,924	3,169	45,223	80.2	99.3	81.9	22.0	55.9	10.4
New York	Worcester County	381,611	150,580	241,291	357,784	101,332	4,111	31,228	23,827	236,504	63.2	93.8	26.6	1.1	8.2	62.0
	Totals For State	1,628,111	593,997	1,010,350	1,595,129	1,032,960	121,688	971,275	32,982	375,347	62.1	98.0	63.4	7.5	59.7	23.1
	" "	130,111	61,204	115,707	130,111	130,111	45,804	130,111	0	0	88.9	100.0	100.0	35.2	100.0	0
N. J.	Miller	185,224	33,301	185,224	185,224	159,620	79,102	185,224	0	0	100.0	100.0	86.2	42.7	100.0	0
	Schreier	192,626	44,864	192,626	192,626	150,614	66,746	192,626	0	0	100.0	100.0	78.2	34.6	100.0	0
	Remainder of State	87,953	7,686	87,953	87,953	1,365	0	87,953	0	0	100.0	100.0	1.6	-	100.0	0
Penna.	Totals For State	465,803	85,851	465,803	465,803	311,599	145,848	465,803	0	0	100.0	100.0	66.3	31.3	100.0	0
	Barber	387,182	131,468	387,182	335,828	271,302	139,463	124,054	51,354	62,697	100.0	86.7	70.1	36.0	32.0	16.2
	Charlton	173,870	47,177	172,140	160,640	102,090	38,375	43,930	13,230	43,485	99.0	92.4	58.7	22.1	25.3	25.0
All States	Harpp	567,535	260,931	549,693	557,423	475,204	152,901	196,605	10,112	117,204	96.9	98.2	83.7	26.9	34.6	20.7
	Hick	201,026	43,746	188,677	188,110	118,153	35,967	45,998	12,916	65,833	93.9	93.6	58.8	17.9	22.9	32.7
	Holcomb	240,553	62,907	187,391	228,175	163,038	62,461	41,241	12,383	46,985	77.9	94.9	67.8	26.0	17.1	19.5
N. J.	Lilley	257,420	50,538	217,975	219,240	100,388	21,385	34,734	38,180	151,455	84.7	85.2	39.0	8.3	13.5	58.8
	Sievers	345,757	91,024	169,023	298,316	55,443	6,723	181,318	47,441	65,848	48.9	86.3	16.0	1.9	52.4	19.0
	Woolschlager	243,145	69,179	96,173	235,145	109,626	26,722	41,839	8,000	90,512	39.6	96.7	45.1	11.0	17.2	37.2
N. J.	Sub-Totals For Present Districts	2,416,493	756,970	1,968,254	2,222,877	1,395,244	483,997	709,719	193,616	644,019	81.4	92.0	57.7	20.0	29.4	26.7
	Counties Outside Present Districts	416,850	69,938	10,908	188,376	64,186	0	41,109	228,474	144,578	2.6	45.2	15.4	0	9.9	34.7
	Totals For State	2,833,343	826,908	1,979,162	2,411,253	1,459,430	483,997	750,828	422,090	788,597	69.9	85.1	51.5	17.1	26.5	27.8
Penna.	" "	16,742	3,771	0	16,742	1,417	0	16,742	0	0	0	100.0	8.5	0	100.0	0
	DeBerti	221,333	37,196	211,216	195,142	48,713	10,322	70,158	26,191	107,453	95.4	88.2	22.0	4.7	31.7	48.5
	Simmonds	213,285	41,035	209,196	190,200	41,913	6,972	53,213	23,085	86,854	98.1	89.2	19.7	3.3	24.9	40.7
All States	Counties Outside Present Districts	271,653	58,578	236,302	218,255	67,926	23,260	37,695	53,398	180,064	87.0	80.3	25.0	8.6	13.9	66.3
	Totals For State	706,271	136,809	656,714	603,597	158,552	40,554	161,066	102,674	374,371	93.0	85.5	22.4	5.7	22.8	53.0
	Sub-Totals Excluding Counties Outside Present Districts in N.Y.	11,507,595	4,074,409	8,559,615	10,545,033	5,341,051	1,011,342	3,655,074	962,562	5,064,435	74.4	91.6	46.4	8.8	31.8	44.0
N. J.	Totals	11,924,445	4,144,347	8,570,523	10,733,409	5,405,237	1,011,342	3,696,183	1,191,036	5,209,013	71.9	90.0	45.3	8.5	31.0	43.7







Table 46 - Nursery Sanitation Work During 1947, By States  
(All rework and conducted under Regular Cooperative Program)

State	No. Nurseries Worked	Est. No. White Pines in Nurseries Worked	Acreage Worked	No. Ribes Destroyed	Total Man Days	No. Ribes Per Acre	No. Acres Worked Per Man Day
N. H.	1	500,000	293	1	2	0.003	146.5
Vt.	1	250,000	333	47	3	0.1	112.3
Conn.	3	1,535,000	762	38	47	0.05	16.2
N. Y.	3	31,050,000	2,985	183	55	0.06	54.3
All States	8	33,335,000	4,373	269	107	0.06	40.9

Table 47 - Nursery Sanitation Work, 1930-1947, Inclusive  
By States

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild & Dult.	Cult. Only		Ribes	Man Days
Maine	Initial	205	103,538	22	163	502.6	.79
	Rework	1,529	10,819	-	300	7.1	.20
	Total	1,735	114,357	22	463	65.9	.27
N. H.	All Rework	3,055	7,826	1	285	2.6	.09
Vt.	" "	2,563	4,961	75	412	1.9	.16
Mass.	Initial	783	30,558	112	147	39.0	.19
	Rework	7,370	19,457	182	1,123	2.6	.15
	Total	8,153	50,025	294	1,270	6.1	.16
R. I.	Initial	1,780	725	565	167	0.4	.09
	Rework	18,156	4,970	184	277	0.3	.02
	Total	19,936	5,695	749	444	0.3	.02
Conn.	Initial	7,683	16,934	165	335	2.2	.04
	Rework	62,893	18,942	980	2,593	0.3	.04
	Total	70,576	35,876	1145	2,928	0.5	.04
N. Y.	Initial	3,735	31,579	655	424	8.5	.11
	Rework	115,061	136,066	1246	6,190	1.2	.05
	Total	118,796	167,645	1901	6,614	1.4	.06
N. J.	Initial	795	2,114	114	109	2.7	.14
	Rework	1,050	765	-	19	0.7	.02
	Total	1,845	2,879	114	128	1.6	.07
Penna.	Initial	4,414	38,954	494	343½	8.8	.08
	Rework	29,543	54,074	73	4,137½	1.8	.14
	Total	33,957	93,028	567	4,481	2.7	.13
All States	Initial	19,396	224,402	2,127	1,688½	11.6	.09
	Rework	241,220	257,890	2,741	15,336½	1.1	.06
	Total	260,616	482,292	4,868	17,025	1.85	.07

No separate record was kept of the nursery sanitation work prior to 1930, the results of such activities being included with the regular ribes eradication work.



**Table 48 - Nursery Sanitation Work, 1930-1947, Inclusive  
By Programs**

Program	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild & Cult.	Cult. Only		Ribes	Man Days
Regular Cooperative	Initial	17,076	191,917	1943	1,336½	11.2	.08
	Rework	167,178	184,869	2511	8,148	1.1	.05
	Total	184,254	376,786	4454	9,484½	2.0	.05
P.W.A.	Initial	415	25,600	3	147	61.7	.35
	Rework	15,422	14,381	95	1,356	0.9	.09
	Total	15,837	39,981	99	1,503	2.5	.09
C.C.C.	Initial	280	279	47	33	1.0	.12
	Rework	11,592	45,523	14	3,699	3.9	.32
	Total	11,872	45,802	61	3,732	3.9	.31
W.P.A. (F.A.)	Initial	590	72	45	9	0.1	.01
	Rework	29,908	11,662	119	1,742	0.4	.06
	Total	30,498	11,734	164	1,751	0.4	.06
W.P.A. (State)	All Rework	4,117	492	-	300	0.1	.07
S.C.S.	Initial	1,035	6,534	89	163	6.3	.16
	Rework	13,003	963	1	91½	0.1	.01
	Total	14,038	7,497	90	254½	0.5	.02
All Programs	Initial	19,396	224,402	2127	1,688½	11.6	.09
	Rework	241,220	257,890	2741	15,336½	1.1	.06
	Total	260,616	482,292	4868	17,025	1.85	.07

**Table 49 - Status of Nursery Sanitation Work, December 31, 1947**

State	Nurseries Where Protection Established and Being Maintained				Acreage of Control Areas	Number Nurseries Protected During 1947	No. Additional Nurseries Which Established Zones But Now Abandoned
	Number						
	Federal	State	Private	Total			
Maine	-	1	1	2	409	-	5
N. H.	-	1	1	2	749	1	1
Vt.	-	1	-	1	333	1	-
Mass.	-	4	2	6	1485	-	14
R. I.	-	-	-	-	-	-	6
Conn.	-	2	2	4	1401	3	17
N. Y.	-	3	-	3	3690	3	5
N. J.	-	1	-	1	600	-	1
Penna.	1	4	3	8	3921	-	6
All States	1	17	9	27	12,588	8	55



Table 50 - List of Nurseries Maintaining Sanitation Zones in Northeastern States  
(December 31, 1947)

	<u>Acres of Sanitation Zone</u>
<u>Maine</u>	
Western Maine Nursery - Fryeburg, Maine.....	247
State Nursery - Orono, Maine.....	162
	<u>409</u>
<u>New Hampshire</u>	
Keene Forestry Associates - Keene, N. H. ....	250
State Nursery - Boscaawen, N. H. ....	499
	<u>749</u>
<u>Vermont</u>	
State Nursery - Essex Junction, Vt. ....	333
<u>Massachusetts</u>	
Department of Conservation Nursery - Amherst, Mass. ....	225
Department of Conservation Nursery - Bridgewater, Mass. ....	100
Department of Conservation Nursery - Clinton, Mass. ....	150
Department of Conservation Nursery - Erving, Mass. ....	50
Kelsey Highlands Nursery - Buxford, Mass. ....	900
Weston Nursery - Weston, Mass. ....	60
	<u>1,485</u>
<u>Connecticut</u>	
Northeastern Forestry Company - Cheshire, Conn. ....	356
State Nursery - Barkhamstead, Conn. ....	492
State Nursery - Tolland, Conn. ....	365
Great Pond Nursery - Simsbury, Conn. ....	188
	<u>1,401</u>
<u>New York</u>	
State Nursery - Saratoga Springs, N. Y. ....	2,310
State Nursery - Lowville, N. Y. ....	1,150
N. Y. State College of Forestry Nursery - Syracuse, N. Y. ....	230
	<u>3,690</u>
<u>New Jersey</u>	
State Nursery - Washington Crossing, N. J. ....	600



Table 50 - List of Nurseries Maintaining Sanitation Zones in Northeastern States (Continued)  
(December 31, 1947)

	<u>Acreage of Sanitation Zone</u>
<u>Pennsylvania</u>	
Clearfield State Nursery - Clearfield, Penna. ....	370
Greenwood State Nursery - Petersburg, Penna. ....	411
Mt. Alto State Nursery - Mt. Alto, Penna. ....	366
Rockview State Nursery - Pleasant Gap, Penna. ....	354
S. C. S. Nursery - Mt. Eagle, Penna. ....	215
Andorra Nursery - Chester Hill, Penna. ....	1,065
Fairview Nursery - Fairview, Penna. ....	552
Doyle Nursery - Seven Stars, Penna. ....	561
	<u>3,921</u>
<u>All States</u>	
27 Nurseries .....	12,566



Table 51 - Special Ribes Nigrum Elimination Work, 1923-1947, Inclusive - By States

State	No. Properties Inspected	No. Patches Located	No. Ribes Destroyed			Total Man Days
			Nigrum	Other Cult.	Total	
Mass.	750,359	6,657	42,629*	432	43,061	7,347
R. I.	110,137	1,917	16,219	1,093	17,312	1,929
Conn.	318,344	32,695**	7,464	42,397	49,861	14,610
N. Y.	526,593	5,128	37,064	761	37,825	5,250
All States	1,705,433	46,397	103,376	44,683	148,059	29,136

\*Includes 556 bushes pulled in connection with special black currant elimination project around nurseries in 1925 and 1926.

\*\*The survey in Connecticut included all cultivated ribes. It is estimated that the number of black currant patches in that state did not exceed 1500.

Table 52 - Special Ribes Nigrum Elimination Work, 1923-1947, Inclusive - By Programs

Program	No. Properties Inspected	No. Patches Located	No. Ribes Destroyed			Total Man Days
			Nigrum	Other Cult.	Total	
Regular Cooperative	1,082,878	14,227	85,624	20,550	106,174	14,155
C.W.A.	6,157	39	7,485	-	7,486	375
P.A. (F.A.)	180,313	869	3,156	432	3,588	1,081
N.A.A.	195,750	5,404	-	-	-	1,850
I.R.A.	240,335	25,858	7,110	23,701	30,811	11,675
All Programs	1,705,433	46,397	103,376	44,683	148,059	29,136

C.W.A. project consisted of location work only.

Table 53 - Status of Special Ribes Nigrum Elimination Work - December 31, 1947

State	Years Work Performed	Total Number Townships in State	No. Townships Where Special Black Currant Elimination Work	
			Completed	Partially Completed
Mass.	1930-1940, Incl.	355	346*	-
R. I.	1929-1933 "	39	39	-
Conn.	1930-1935 "	169	169	-
N. Y.	1928-1940 "	996	236	39
All States	-	1,559	790	39

\*Nine additional townships on islands next to mainland will not be worked.

In the other states, Ribes nigrum have been eradicated in the worked portions of the control areas in conjunction with regular control activities. Very few black currants have been found in these states.



**Table 54 - State Compensation Paid For Cultivated Ribes  
Destroyed During Period 1918-1947, Inclusive**

State	Total No. Cult. Ribes Destroyed	No. Bushes Paid For	% Bushes Paid For	No. Persons Paid Compensation	Amount Paid in Reimbursement	Average Amount Paid Per Bush
Maine	157,466	0	-	0	0	-
N. H.	160,037	2,008	1.3	63	\$550.60	\$.274
Vt.	18,232	1,646	9.0	133	792.91	.482
Mass.	331,464	42,098	12.7	674	15,029.75	.357
R. I.	41,943	1,410	3.4	58	509.79	.362
Conn.	90,700	175	0.2	16	103.50	.591
N. Y.	187,376	16,338	8.7	1,151	5,587.99	.342
N. J.	1,842	0	-	0	0	-
Penna.	57,791	517	0.9	71	167.75	.342
All States	1,046,901	64,192	6.1	2,166	\$22,742.29	\$.354

No federal money has been paid for ribes compensation, and no compensation has been paid for any of the 157,466 cultivated ribes destroyed in Maine during the period 1918-1947, inclusive.

Table includes 295 cultivated bushes removed in connection with control activities at Acadia National Park, and 115 cultivated ribes destroyed on National Forest land projects. No compensation was paid for such bushes removed from the control areas on these federal land projects.

**Table 55 - Blister Rust Canker Elimination Work During 1947**

State	Land Ownership Class	Total Number Pines Examined	No. Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	Total Number Cankers Removed	Total Man Days
Maine	National Park	538	78	245	766	126
Mass.	State & Private	13,850	157	233	826	60
N. Y.	"	24,240	1,650	1,237	1,824	181
	"	38,090	1,807	1,470	2,650	241
All States	National Park	538	78	245	766	126
	Total	38,628	1,885	1,715	3,416	367



Table 56 - Blistar Rust Canker Elimination Work, 1932-1947, Inclusive  
By States and Programs

State	Program	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	Total No. Cankers Removed	Total Man Days
Maine	Regular	98,518	8,369	13,136	22,492	1,012
	C.C.C.	58,261	2,957	8,879	29,745	2,177
	Total	156,779	11,326	22,015	52,237	3,189
N. H.	All W.P.A.(F.A.)	28,581	5,731	638	711	219
Vt.	Regular	24,647	1,597	1,765	3,116	189
	W.P.A. (F.A.)	226,489	38,342	18,838	21,253	2,491
	W.P.A.(State)	21,457	985	786	895	367
	Total	272,593	40,924	21,389	25,264	3,047
Mass.	Regular	13,850	157	233	826	60
	W.P.A.(F.A.)	116,167	14,956	3,682	4,114	3,293
	C.W.A.	4,648,000	17,303	12,784	17,511	5,409
	Total	4,778,017	32,416	16,699	22,451	8,762
N. Y.	Regular	41,590	2,028	1,288	2,214	263
	W.P.A.(F.A.)	1,577,875	149,379	190,702	255,076	12,420
	W.P.A.(State)	324,770	8,868	7,571	8,257	1,519
	Total	1,944,235	160,275	199,561	265,547	14,202
Penna.	Regular	220	75	45	130	6
	C.C.C.	567,018	28,308	76,048	458,522	4,564
	W.P.A.(F.A.)	352,460	4,287	53,927	110,377	2,742
	Total	919,698	32,670	130,020	569,029	7,312
All States	Regular	178,825	12,226	16,467	28,778	1,530
	C.C.C.	625,279	31,265	84,927	458,267	6,741
	W.P.A.(F.A.)	2,301,572	212,695	267,787	391,531	21,165
	W.P.A.(State)	346,227	9,853	8,357	9,152	1,886
	C.W.A.	4,648,000	17,303	12,784	17,511	5,409
	Total	8,099,903	283,342	390,322	935,239	36,731

No special blister rust canker elimination work was performed in the region prior to 1932.

Table 57 - Blistar Rust Canker Elimination Work, 1932-1947, Inclusive  
By Land Ownership Classes

Ownership Class	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	Total Number Cankers Removed	Total Man Days
State & Private Lands	8,038,331	279,966	380,395	902,903	34,255
Acadia National Park, Me.	61,572	3,376	9,924	32,336	2,476
Total	8,099,903	283,342	390,322	935,239	36,731







es During Calendar Year 1947

States and Local Cooperators					Grand Total
	Indiv.	Towns	Counties	Total	
00	-	9,190.36	-	15,434.59	85,454.67
34	-	31,295.53	-	44,691.83	125,093.42
69	4.00	5,679.03	-	8,917.47	58,949.90
00	5965.34	-	-	14,580.43	55,501.89
10	-	-	-	5,100.10	9,407.08
00	337.31	1,677.30	-	9,270.31	24,753.51
92	1,287.50	-	16,886.81	158,108.21	288,350.79
00	-	-	-	19,033.50	62,869.73
05	7,594.15	47,842.22	16,886.81	275,136.44	710,380.99

for the Cambridge regional office.







Table 58 - Total Expenditures For All Blister Rust Control

State	Federal Funds					States	
	B.E. and P.Q.		Forest Service	Park Service	Total	Cash	Commer. Serv.
	3101	3103					
Maine	20,283.69	46,852.04	486.60	2397.75	70,020.08	5,394.23	
N. H.	24,649.61	55,751.98	-	-	80,401.59	11,029.95	
Vt.	16,029.21	33,840.37	162.85	-	50,032.43	653.75	
Mass.	17,556.34	23,365.12	-	-	40,921.46	7,455.03	
R. I.	962.72	3,344.26	-	-	4,306.98	3,970.00	
Conn.	5,430.95	10,052.25	-	-	15,483.20	4,895.70	
N. Y.	31,469.62	98,772.96	-	-	130,242.58	125,723.85	
Penna.	13,793.10	28,675.83	1367.30	-	43,836.23	17,845.50	
All States	130,175.24	300,654.81	2016.75	2397.75	435,244.55	176,974.21	

Table 58 does not include \$40,352.93 Federal 3101 and \$1249.87 Federal 3103 funds for















Report  
ON  
WHITE PINE BLISTER RUST CONTROL  
SOUTHERN APPALACHIAN REGION  
1947

UNITED STATES DEPARTMENT OF AGRICULTURE  
Agricultural Research Administration  
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE  
Southern Appalachian Regional Office  
Box No. 507  
Room 208, Federal Building  
HARRISONBURG, VIRGINIA  
March 1948







REPORT  
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WHITE PINE AND WILD RIBES GROWING TOGETHER.  
WHITE PINE LODGE, GILES COUNTY, VIRGINIA.







# C O N T E N T S

	Page
<b>PART I - Leadership, Coordination and Technical Direction</b>	
of Blister Rust Control in the Southern Appalachian	
Region. Work Project BLR 1-2 . . . . .	1-15
Foreword . . . . .	1
Summary of Accomplishments During 1947 Field Season	1
White Pine Survey . . . . .	2-3
Ribes Eradication . . . . .	3-4
Acres Worked By Land Ownership. Table . . . . .	5
Status of Acres Worked on Ribes Eradication	
By Land Ownership as of December 31, 1947 . . . . .	6
The Spread of the Rust . . . . .	7
Wage Rates and the Labor Situation . . . . .	7
Checking . . . . .	7-8
Investigational Work . . . . .	8
Summary of Checking Work By States for 1947 . . . . .	9
Other Activities . . . . .	10
Educational Work . . . . .	10
Nursery Sanitation . . . . .	10
Canker Elimination . . . . .	10
Automotive Equipment . . . . .	10
Costs . . . . .	11
Regional Organization . . . . .	11
Summary of Expenditures on Blister Rust Control . . . . .	12
Proposed District Organization Under Maintenance	
Program - Map . . . . .	13
List of Permanent Personnel Employed . . . . .	14-15
 <b>PART II - Blister Rust Control on State and Private Lands,</b>	
Work Project BLR 3-2 . . . . .	16-36
Summary of Ribes Eradication . . . . .	18
Summary of Acreage Worked . . . . .	19
Status of Acres Worked on Ribes Eradication . . . . .	20
Introduction . . . . .	21
Delaware . . . . .	21
Maryland . . . . .	22
Virginia . . . . .	22-23
Status Map of Virginia . . . . .	24
North Carolina . . . . .	25-26
Status Map of North Carolina . . . . .	27
West Virginia . . . . .	26
Status Map of West Virginia . . . . .	28
Kentucky . . . . .	29
Status Map of Kentucky . . . . .	31







Tennessee . . . . .	39
Status Map of Tennessee . . . . .	39
South Carolina . . . . .	50
Status Map of South Carolina . . . . .	50
Georgia . . . . .	30-35
Status Map of Georgia . . . . .	34

## PART III - Blister Rust Control on National Forests

Work Project BLR-3 . . . . .	36-49
Summary of Ribes Eradication . . . . .	38
Summary of Acreage Worked . . . . .	39
Status of Acres Worked on Ribes Eradication . . . . .	40
George Washington National Forest . . . . .	41-42
Jefferson National Forest . . . . .	42-43
Monongahela National Forest . . . . .	43
Cumberland National Forest . . . . .	43-44
Pisgah National Forest . . . . .	44
Nantahala National Forest . . . . .	44-47
Cherokee National Forest . . . . .	47-48
Sumter National Forest . . . . .	48-49
Chattahoochee National Forest . . . . .	49

## PART IV - Blister Rust Control on National Parks

Work Project BLR-4 . . . . .	50-60
Summary of Ribes Eradication . . . . .	51
Summary of Acreage Worked . . . . .	52
Status of Acres Worked on Ribes Eradication . . . . .	53
Shenandoah National Park . . . . .	54-55
Status of Control . . . . .	54
Work in 1947 . . . . .	54-55
Work Schedule for 1948 . . . . .	55
Blue Ridge Parkway . . . . .	56-57
Status of Control . . . . .	56
Costs . . . . .	57
Work Schedule for 1948 . . . . .	57
Great Smoky Mountains National Park . . . . .	58-60
Status of Control . . . . .	58
Blister Rust Control Work in 1947 . . . . .	58-59
Costs . . . . .	59
Work Schedule for 1948 . . . . .	59-60







PART I

LEADERSHIP, COORDINATION, AND TECHNICAL DIRECTION

OF

BLISTER RUST CONTROL

IN

SOUTHERN APPALACHIAN REGION

1947

WORK PROJECT BLR 1-2







### CONTENTS

White pine blister rust control activities in 1947 were carried out in 5 of the 9 States comprising the Southern Appalachian Region. Operations were carried on under four main projects, namely RLM 1-2, Landward 3-1, Coordination and Technical Direction of the program; RLB 3-1, Cooperative Blister Rust Control Operations on State and Private Lands; RLB 4, Blister Rust Control on National Forest Lands and RLB 5 Blister Rust Control on National Park Service Lands.

An attempt has been made to condense the material in this report as much as possible. The reports by States, National Forests and National Parks are segregated by work projects but separate reports have not been issued for each State, Forest and Park. For the last few years these separate reports have been prepared and distributed to our cooperators. Because of repeated requests for copies of the full annual report we decided to send all of our cooperators and other interested persons a complete annual report for 1947.

### SUMMARY OF ACCOMPLISHMENTS DURING THE 1947 FIELD SEASON

TABLE 1

#### Summary of Work Performed in 1947 By Operating Agencies

Agency	Expenditures (1)	Acres Rusts Free (2)	Acres forest Rusts-Destroyed			Rusts Destroyed	Work- Days (3)
			First	Second	Other		
Bureau & State	61,730.46	279,746	2,135	3,124	1,086	105,865	5,160
Forest Service	80,422.30	334,615	15,389	6,358	3,731	464,478	8,696
National Park Service	17,753.35	11,779	83	813	1,159	22,943	1,234
TOTAL RESULTS	169,906.11	626,140	17,597	10,295	5,976	573,286	15,090

(1) See Table VIII, page 12 for full expenditure breakdown.

(2) Acres found rust-free on survey and blocked out on post cards.

(3) Includes work-days on rusts eradication and on blocking out rust-free acreage. (5,059 on block-out and 7,992 on rust eradication).



# WHITE PINE ADULTS

White pine survey work is still one of our major activities since there is so much territory in the region which has not been examined for the last 12 years. Most of the survey work is actually a resurvey or post check of white pine-bearing lands to determine present white pine and ribes conditions. Several good white pine seed years, coupled with continued fire protection measures, have accounted for a gradual increase in white pine acreage as well as an increase in the density of stocking. Although most of this increase in white pine acreage is on ribes-free land, white pine is also gradually invading the higher mountainous regions where ribes are commonly found. This conditions has called for more initial ribes eradication work than was anticipated several years ago before the resurvey was started. In 1942 after the closing of all emergency programs the initial survey stood at 2,604,111 acres of white pine and 5,537,293 acres of control area. Although our resurvey is not yet completed our white pine acreage figure at the close of the 1947 calendar year was 3,200,322 and a control acreage of 6,983,616. Thus we have had an increase of 596,211 acres of white pine (23%) and 1,446,323 acres of control (26%) over a period of 5 years. Although some of this increase was due to a more systematic method of conducting surveys, a good deal can be credited to an actual increase in white pine reproduction. A study which was conducted over a period of several years showed that white pine is an important associate of the Southern Appalachian hardwood forests comprising 14% of the total stand for all species in all diameter classes. By size classes white pine comprised 14% of the reproduction; 11% of the pole class and 14% of the thrifty immature and mature class.

The following table gives the white pine acreage by states and ownership as of December 31, 1947

TABLE II

White Pine Acreage By States and Ownership  
As Of December 31, 1947

State	Acres White Pine Worth Protecting	Approximate Percent By Ownership		
		State & Pvt.	U.S.F.S.	U.S.P.S.
Delaware	242	100	-	-
Maryland	72,973	100	-	-
Virginia	614,533	71	28	1
N. Carolina	744,737	82	16	2
West Virginia	340,599	77	23	-
Kentucky	48,179	65	35	-
Tennessee	770,339	61	32	7
S. Carolina	64,192	71	29	-
Georgia	544,478	46	54	-
REGIONAL TOTAL	3,200,322	68	30	2



The current White Pine seed crop (1955) was produced from seed averaging generally 4440 seeds per bushel. North of Asheville, North Carolina. This, following the unusually high amount of soil disturbance associated with timber cutting, may result in great amounts of white pine reproduction. The planting of white pine is still being hampered due to the small amount of available nursery stock. This is being built up and a great increase in planting should be noted in about 2 years. The rate of white pine cutting continues high and the average price ranges from about \$15.00 to \$25.00 per thousand. Good progress is being made in state and Federal agencies in developing timber management programs. This increased state improvement activities white pine would respond accordingly well in the Southern Appalachians.

### RIBES ERADICATION:

Approximately 85 or 420,000 acres of our best total control acreage falls in ribes-bearing territory on which continued ribes eradication must be performed to control the disease. About 100,000 acres of this ribes-bearing acreage is not on maintenance. The remainder is in need of second and/or third working.

Ribes eradication on National Forest lands has progressed rapidly during the last 5 years with the result that all except the George Washington National Forest are mostly on maintenance. More wild ribes are associated with white pine on the George Washington National Forest than any of the other National Forests in the region and it may be 5 or more years before this Forest can be considered as entirely on maintenance.

Of the three National Parks in the region the Shenandoah National Park in Virginia is the only one on which there is considerable control work to be performed. However, even on this park good control is being obtained. Ribes suppression due to the increase of the forest cover is increasingly aiding the Park Service in its eradication program. In the Blue Ridge Parkway and the Great Smoky Mountains National Park the main problem is continued ribes eradication.

On white pine private lands our biggest problem is in West Virginia where we have over 100,000 acres in need of a second working. The heavy of cooperative funds during the past few years have not been sufficient to complete our second working on private lands in the state of white pine. Particularly over 70,000 acres in need of reworking lies in southwestern West Virginia where pine infection has not yet been found. The remaining acreage, however, is in pine infection territory. The remainder of the ribes-bearing control acreage in white pine is scattered throughout the region, most of which is located in Virginia and western Maryland.



TABLE III

Summary of Ribes Eradication By Operating Agencies - 1947

Operating Agencies	Acres Ribes-Free	Acres Worked (Ribes-Bearing Lands)			Ribes Destroyed	Man- Days
		First Working	Second Working	Other Workings	Total Workings	
Bureau & State	279,746	2,125	3,192	3,086	8,403	8,557
Forest Service	354,615	12,389	6,256	2,731	21,376	8,596
Park Service	11,779	83	913	1,159	2,155	1,418
TOTALS	626,138	14,597	10,361	6,976	31,934	13,571

\* Includes areas blocked out by survey and post checks.



TABLE IV

Acres Worked By Land Ownership in 1947

OWNERSHIP	ACRES WORKED				TOTAL (All worked)
	Forest Land-Tree	Initial	Second	Other	
Forest Service, Region #7	69,403	6 970	5,860	2,132	82,400
Forest Service, Region #8	110,365	7	-	1	110,367
SUB-TOTAL, Forest Service	180,058	6 977	5,860	2,133	187,000
Park Service, Region #1	11,779	83	916	1,159	12,838
SUB-TOTAL, Federal Lands	191,847	7,060	6,776	2,292	208,907
State & Private Lands, Area #1 (Virginia and North Carolina)	315,630	6,446	3,488	140	325,604
State & Private Lands, Area #2 (West Virginia, Kentucky, Tennessee & South Carolina)	118,901	961	8,314	1,544	129,720
SUB-TOTAL, State & Private Lands	434,531	7,407	5,800	8,664	456,402
RECEIPT TOTAL TOTAL	626,388	14,497	10,363	8,978	659,208

\* Includes acres blocked out by survey and lost checks

TABLE 7

Listing of Acres Worked on Ribes Eradication by Land Ownership  
As of December 31, 1947

LAND OWNERSHIP	TOTAL ACRES WHITE PINE	ACRES CONTROL	A C R E S				RIBES DESTROYED	TOTAL VALUE
			First Working	Other Working	All Working	On Maintenance		
Forest Service	954,740	1,632,971	1,622,465	85,244	1,707,709	1,528,637	4,932,610	17,000
Park Service	72,839	130,621	127,546	8,153	135,699	113,693	1,917,318	22,100
Indian Service	22	445	445	-	445	445	-	-
Sub-Total, Interior	72,711	131,066	127,991	8,153	136,144	114,138	1,917,218	22,100
TOTAL FEDERAL	1,027,451	1,794,037	1,750,456	93,397	1,843,853	1,642,795	6,849,828	40,200
State & Private	2,192,891	6,189,679	5,107,149	212,878	5,320,028	4,834,174	27,780,180	153,000
TOTALS	3,200,322	6,983,616	6,857,605	306,276	7,163,881	6,476,969	34,630,016	193,200

NOTE. All acreage figures listed in above table are net acres. Acreage discontinued because of fire, disease, poor quality white pine, etc., are not shown. Ribes and man-days listed are gross figures and represent work performed by Forest Service, Park Service and Bureau & State operating agencies. Because of intermingled land ownership no attempt is made to segregate ribes destroyed and acreage worked by land ownership.

(1) All work on Cherokee Indian Reservation performed by Bureau Agents.



## THE SPREAD OF THE RUST

Extensive searching for rust in 1947 turned up 5 new white pine infection centers. The most important discovery was the finding of a diseased white pine in western Johnson County, Tennessee. This is the first white pine infection reported in Tennessee. Other new infection centers were Bland County, Virginia; Frederick County, Virginia; Grant County, West Virginia and McDowell County, North Carolina. The largest infected area was in Bland County, Virginia where scattered infections were found over a 50 acre tract.

No new ribes infection centers were reported during the year.

## WAGE RATES AND THE LABOR SITUATION

In general, labor was not difficult to obtain in 1947 and our wage rates of 60, 65, 75 and 85 cents per hour seemed adequate. How these rates will compare with other federal and state agencies during 1948 remains to be seen. Already there are indications that we are low and some adjustments may have to be made. However, nothing will be done until the proposed wage board is established for the Bureau at which time a new canvas of the wage problem should be undertaken so that our hourly rates may compare favorably with the National Forest Service and National Park Service who are operating under wage board procedures.

Although a number of new men are hired during the ribes eradication season, we are still depending a great deal on the re-hiring of old employees who have worked for us nearly every season for the past 8-10 years. Most of our seasonal labor comes from small mountain communities where competition with industrial centers offers no immediate concern. However, as the valley towns become more industrialized there will be more incentive for the people living in the mountains to work in factories at higher wages than we are now paying. This condition already exists to a limited extent and may become more general in a few years. However, our labor load during the peak seasons will gradually become less as more acreage is placed on maintenance and we could probably afford to pay higher wage rates for fewer, well trained men.

## CHECKING:

Strong efforts have been made to keep our ribes-checking work up to date. Areas which are slated for a reworking are post checked to determine the extent and intensity of ribes regeneration following the previous working. From the post checking records and maps, crew work is definitely delimited. Regular checks are made following the current year's ribes eradication work and are made to determine whether the crews did an efficient job and to

determine the acreage to be reserved, if any. Ribes eradication work is considered effective if less than 25 feet of livestock per acre is left. Ribes checks are ribes checks conducted on areas which have not been initially worked.

Following is a table summarizing all checking work for those states in which ribes eradication was performed in 1947. In Kentucky the ribes areas were so small that no formal checks were made. (SEE TABLE FOLLOWING PAGE).

#### ORGANISATIONAL WORK:

Studies begun several years previous on various pine infections were continued during the year. During the year the rust continued to develop much the same as in other similar studies.

During the year several plots were established to test the ability of 2-4-D to kill decapitated ribes bushes. The type of chemical and concentrations used indicated that it is less effective on R. rotundifolium and R. cynosbati than salt and borax. Similar work in other regions on those species indicated the same. For the present we will continue to use the salt-borax mixture.

Surveys were made to determine the degree of blister rust infection on white pine in West Virginia and Virginia in the vicinity of the George Washington and Monongahela National Forests. The survey was completed in West Virginia and the results are shown below:

TABLE VII

CONTROL STATUS OF AREA	ACRES SAMPLED	PERCENT WHITE PINE INFECTED
1. Initial Ribes removal performed 1 to 3 years after infection first appeared.	2,200	2.1
2. Initial Ribes removal performed 6 to 9 years after infection first appeared.	2,590	15.5
3. Initial Ribes removal never performed. Disease active for past 14 years.	588	43.5

The above survey was fully described in Technical Memo No. 19 by Ralph W. Welch in 1947.

The survey in Virginia is incomplete but approximately the northern half was surveyed. The survey thus far indicates that considerably less rust is present than in West Virginia. It is hoped that this disease survey will be completed in 1948.



TABLE VI

Summary of Checking Work By States For 1947

STATE	ADVANCE (1)			POST (2)			REGULAR (3)			TOTAL		
	Strip Acres	Acres Covered	Man-Days	Strip Acres	Acres Covered	Man-Days	Strip Acres	Acres Covered	Man-Days	Strip Acres	Acres Covered	Man-Days
Virginia	-	-	-	188	13,529	144	806	16,385	247	7,237	30,414	747
North Carolina	-	-	-	116	3,733	67	9	320	1	124	3,054	50
West Virginia	41	850	8	1,989	40,541	439	292	6,052	90	2,524	54,787	507
Tennessee	-	-	-	118	4,800	137	36	1,200	15	167	5,600	141
TOTAL	41	350	8	2,708	70,326	765	1,192	24,567	269	8,086	94,850	1,385

(1) Ribes checks made prior to initial work.

(2) Ribes checks made 2-5 years following the last working.

(3) Ribes checks made following current year's work.

Strip acres are the actual acres examined by the checker on a certain percent of the acreage scheduled to be covered by the ribes eradication crews.

OTHER ACTIVITIES:

Educational Work: A series of new 16 mm sound motion pictures in color were produced in 1947 depicting white pine blister rust activities in all the white pine regions of the United States. The series will consist of 5 separate regional films and one general film. The Southern Appalachian film was made in the spring of the year and should be ready for release early in 1948.

Blister rust exhibits were set up at various County Fairs in Virginia and West Virginia as well as the State Fairs in Staunton, Virginia and Lewisburg, West Virginia. A good deal of interest was shown by our exhibits especially the splendid blister rust panel supplied by the Exhibit Service of the U.S. Dept. of Agriculture which was set up at the Staunton Fair in Virginia.

Opportunity was afforded to attend two "Show-Me" trips sponsored by officials of the Jefferson National Forest in Virginia. Our blister rust control work was explained to the group attending the trips.

During the year, 1,458 blister rust publications were distributed; 94 posters set up; 253 persons interviewed; one radio talk by Mr. C.R. Willey, Asst. State Entomologist of Virginia and 14 showings of the old blister rust motion picture. Late in the year plans were made to expand our educational program. A meeting was held in the regional office and the main objectives of what a good educational program should be were set forth. One man was made responsible for this work who will be assisted by one man from each area.

Nursery Sanitation: The Forest Service Nursery at Parsons, West Virginia was again worked in 1947. The nursery is now in good shape but we will continue to give it a thorough working every 2 years. This year only required 37 man-days to cover the 1,500 foot control area. A total of 116 ribs were eradicated. No other nurseries in the region were examined during the year.

Canker Elimination: A small canker elimination job was performed by the Forest Service on the Spice Run white pine area in the Monongahela National Forest in West Virginia. On the first coverage of this heavily infected area all infected trees found were treated. On the second coverage only crop trees were treated. A total of 4 man-days were expended with 97 trees being treated.

AUTOMOTIVE EQUIPMENT:

By the close of the year most of our old automotive equipment was sold; being replaced by 12 new Chevrolet panel trucks, 4 Chevrolet sedan deliveries and 2 Plymouth passenger cars. Of the original equipment we are retaining 2 ambulances, 2 1 1/2 ton army panel deliveries and 1 Ford station wagon carry-all, all purchased from War Assets Administration. Also retained are 2 stake-body trailers, 2 Chevrolet pick-ups and 1 International canopy-topped truck, the latter transferred to us from Barberr.



## Costs:

During the year a total of \$118,385.26 was expended by the various operating agencies on white pine surveys, ribes eradication, checking disease surveys, investigational and educational work and other activities related to the control of the disease.

Due to increased operating costs and higher wage rates our average cost per effective acre-day on ribes eradication rose from \$6.22 in 1946 to \$9.05 in 1947. However, the average cost per acre worked on ribes eradication rose only 1.04, being \$7.16 in 1946 and \$8.23 in 1947. The general use of smaller crews and more rapid coverage were factors in keeping the cost per acre down. Table VII gives a summary of expenditures by States and Operating agencies for 1947. This table will be found on page 13. For all major control activities (ribes eradication, survey and checking) the cost was \$8.23 per acre.

## REGIONAL ORGANIZATION:

Since 1944 the Southern Appalachian Blister Rust Control Region has been operating on an Area basis, with 2 area leaders, 2 assistant area leaders and field supervisors. This organization has been very satisfactory but with more territory being placed on maintenance further changes have gradually taken place. By the end of 1947 no assistant area leaders were employed and we are now operating with a regional leader, 2 area leaders and 9 field supervisors and only maintaining 2 field offices. Plans have been made to divide the region into 4 large districts with a field supervisor in charge of each. These 4 districts will probably be; (1) North Carolina, Tennessee, Georgia and South Carolina - these 4 states are now on maintenance; (2) Southwest Virginia and southeast West Virginia - smaller district than (1) but more work to be done and not yet on full maintenance; (3) West central and northwestern Virginia - not yet on full maintenance; (4) East central and northeastern West Virginia and western Maryland - not yet on full maintenance.

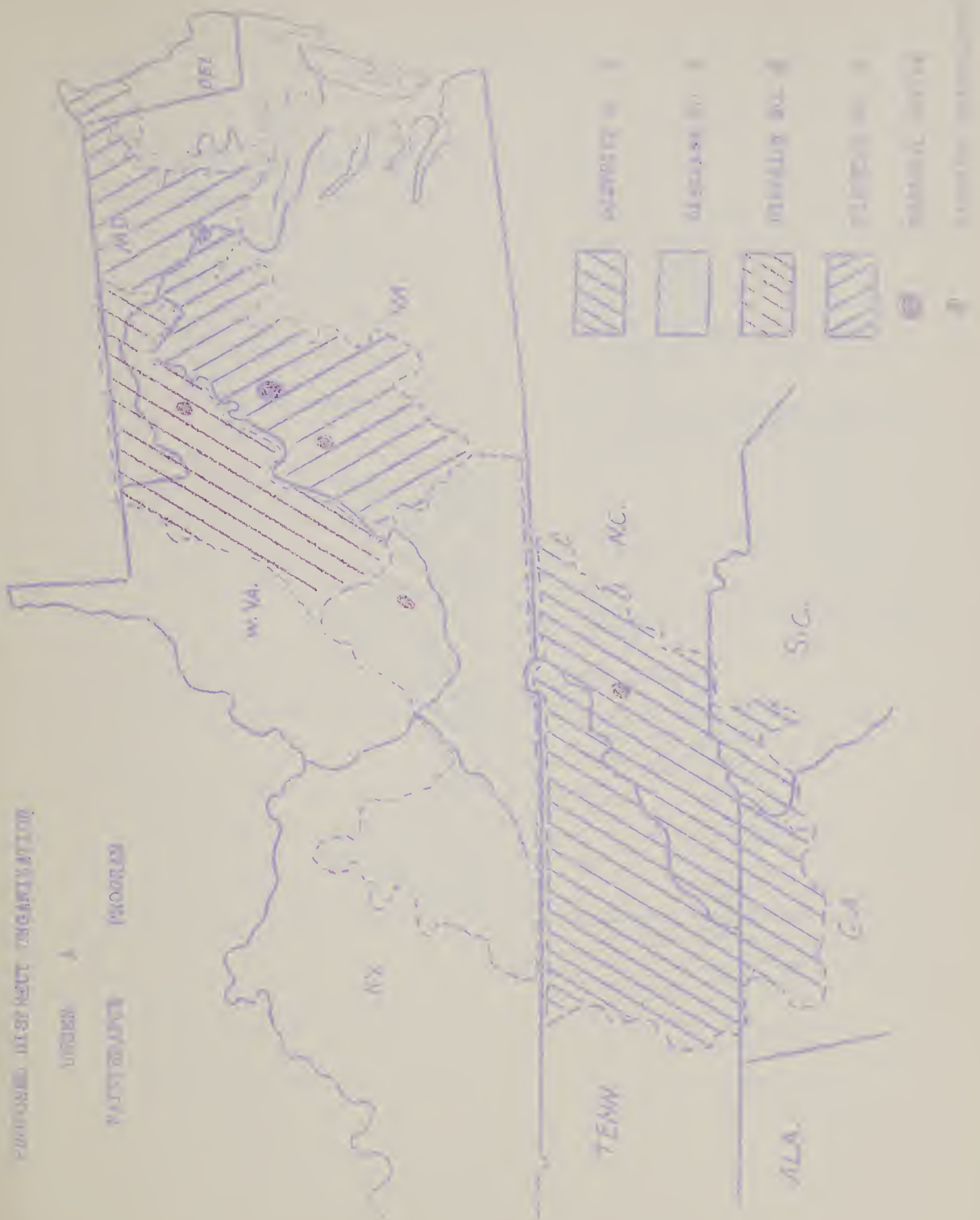
Of the 4 districts only 1 has been definitely established. However, by the end of 1948 we hope to have all districts functioning. The following map (page 13) shows the proposed district organization.





UNITED STATES DEPARTMENT OF AGRICULTURE

UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF PLANT INDUSTRY  
WASHINGTON, D. C.







Below is a list of the personnel personnel employed in the region during the 1949 calendar year.

## PERSONNEL

## ASSIGNMENT

## 1. REGIONAL OFFICE, RICHMOND, VIRGINIA

J. Curtis Bell, P-4

Regional Leader

Henry E. Yost, P-3

Area Leader, Area I

Ralph W. Welch, P-3

Area Leader, Area II

John H. George, CAP-2

Administrative Assistant  
Appointed P-3, Pathologist  
12/10/47

Miss Emily H. Lamer, CAP-4

Clark-Stenographer, Conversion  
to Competitive Classified  
Status 6/5/47

Mrs. Berdica M. Yockle, CAP-4

Clark

Mrs. Rozie R. Hoffman, CAP-3

Clark-Stenographer - Resigned  
1/24/47

Mrs. Audrey J. Franklin, CAP-3

Clark-Stenographer, Probationary  
Appointment, Classified Status  
1/6/47

Mrs. June F. Barber, CAP-2

Clark-Typist

Miss B. Frances Gardner, CAP-2

Clark-Typist, Conversion to  
Competitive Classified  
Status 5/16/47

## REGIONAL SHOP

Miss M. Sayre, CAP-3

Miss Hoffman, District Clerk

## 2. FIELD - AREA I

William V. Linder, P-2

Assistant Area Leader - Trans-  
ferred to Sweet Potato Weevil  
Control, Div. Domestic Plant  
Quarantine 11/1/47

George C. Granger, SP-4

Agent (Field Supervisor)  
Mount Solon, Virginia

Walter A. Stogall, Jr., SP-4

Agent (Field Supervisor)  
Asheville, North Carolina

# PERSONNEL

# ASSIGNMENT

Arthur G. Miller, SP-5

Agent (Field Supervisor)  
Staunton, Virginia

Charles A. Kodumbe, SP-5

Agent (Control Assistant)  
Harrisonburg, Virginia

Irvin L. Stringer, SP-5

Agent (Field Supervisor)  
Hornetock, Virginia

Benny G. Simmons, SP-4

Agent (Field Supervisor)  
Monterey, Virginia

Miss Joyce L. Cramer, CAF-2

Clerk - Mount Solon, Virginia

Mr. Velma H. Foust, CAF-2

Clerk - Wytheville, Virginia

Miss Maxine P. Ford

Clerk - Asheville, N. Carolina  
Paid By State of N. Carolina

## 4. FIELD - AREA II

Glendon E. Keaton, SP-6

Agent (Field Supervisor)  
Pipesem, West Virginia

Clarence A. Fultz, SP-5

Agent (Field Supervisor)  
Lost River, West Virginia

Delbert L. Gillispie, SP-5

Agent (Field Supervisor)  
Marlinton, West Virginia

Miss Jane C. Moore, CAF-3

Clerk-Stenographer  
Marlinton, West Virginia

## 5. NATIONAL PARK SERVICE

Wichas Benton, Checker

Shenandoah National Park, Virginia

Ray Whaley, Checker

Great Smoky Mountains National  
Park, North Carolina & Tennessee

## 6. CONTROL METHODS AND INVESTIGATIONS

Ed L. Busden, P-3

In Charge of Methods and Invest-  
igations - Eastern Regions -  
Cambridge, Mass.

Ed L. Busden, P-3

Pathologist  
Harrisonburg, Virginia











STEM CANKER, ASHE CO. NORTH CAROLINA.



INFECTED STAND OF WHITE PINE



CREW LINING UP TO START WORK



CREW EXAMINING INFECTED WHITE PINE, AUGUSTA CO., VIRGINIA



WHITE PINE STAND PROTECTED FROM BLISTER RUST



ERADICATING WILD RIBES





TABLE I

Summary of Ribes Eradication By Bureau and State - 1947

STATE	ACRES RIBES FREE *	ACRES WORKED ON RIBES-BEARING LANDS				MAN-DAYS RIBES ERADICATION			RIBES DESTROYED		
		First Working	Second Working	Other Workings	Total Working	First Working	Re- Work	Total	First Working	Re- Work	Total
Virginia	109,016	1 325	-	-	1,325	166	-	166	4,520	-	4,520
North Carolina	92,514	7	-	-	7	45	-	45	15,123	-	15,123
TOTAL - AREA I	201,530	1,332	-	-	1,332	211	-	211	19,725	-	19,725
West Virginia	39,330	793	3,192	1,952	5,937	85	1,438	933	17,835	55,102	72,937
Kentucky				ALL WORK PERFORMED BY FOREST SERVICE IN THIS STATE							
Tennessee	1,005	-	-	1,154	1,154	-	163	163	-	8,928	2,000
South Carolina	37,881	-	-	-	-	-	-	-	-	-	-
TOTAL - AREA II	78,216	793	3,192	3,086	7,071	85	1,011	1,036	12,835	88,129	90,964
REGIONAL TOTAL	279,746	2,125	3,192	3,086	8,403	296	1,011	1,307	32,558	60,129	100,687

\* Includes acres blocked out by Survey and Post Checks

TABLE II

Summary of Lands Worked on State and Private Lands - 1947

STATE	ACRES RIBES TREES	ACRES WORKED ON RIBES-BEARING LANDS				TOTAL ALL WORKINGS
		First Working	Second Working	Other Working	Total Ribes- Bearing	
Virginia	258,619	6,546	1,486	140	8,172	261,791
North Carolina	62,071	-	-	-	-	62,071
TOTAL - AREA I	320,690	6,546	1,486	140	8,172	323,862
West Virginia	40,642	991	4,314	1,932	7,237	47,879
Kentucky	30,786	-	-	-	-	30,786
Indiana	1,223	-	-	1,612	1,612	2,855
South Carolina	25,070	-	-	-	-	25,070
TOTAL - AREA II	118,601	991	4,314	3,542	8,947	127,450
REGIONAL TOTAL	434,291	7,537	5,800	3,682	17,021	451,312

\* Above includes private lands intermingled with Federal lands worked by different agencies





## REPORT OF UNITED STATES DEPARTMENT OF AGRICULTURE - 1947

Work was carried on in 5 of the 9 states during the year. No work was required in Delaware and Georgia, they being entirely on maintenance. No funds were available for work in Maryland during the first half of the year. The funds which become available on July 1 will be used in the spring of 1948 when the season is most favorable for checking and ribes eradication. The work in the other States consisted primarily of ribes eradication, resurvey and checking.

During 1947 all control work was completed in the states of Kentucky and South Carolina. During the course of the resurvey a few small pockets of wild ribes were found in Kentucky but none in South Carolina. These two states are now on full maintenance.

The tables on pages 19, 20 and 21 show the work during the year. Table I summarizes the ribes eradication work by the Bureau and State Operating Agency. Table II shows acreage worked on State and Private lands, and Table III gives the status of acres worked, ribes pulled and man-days expended as of December 31, 1947.

### DELAWARE

Most of the 242 acres (Table III) of white pine are plantations. In addition there are numerous ornamental white pines principally in the vicinity of Wilmington. No typical wild ribes have been reported. In one case such bushes were found but are believed to be escaped cultivated greenhouse plants. Cultivated bushes are not popular or numerous. A large percentage of those found near white pine have been destroyed. The rust has been found frequently on cultivated bushes since 1937, but to date none was reported on white pine. The state has an effective quarantine on cultivated ribes. If this is continued along with a moderate amount of checking, ribes eradication, and educational work, the damage to white pine from blister rust can be held to a minimum.



## MARYLAND

Native white pine is found in 10 western counties, and plantations have been established throughout the entire state. Wild ribes are numerous and widespread west of Cumberland. They are also present in localized areas as far east as the Catoctin Mountain range. Cultivated ribes are found in small numbers throughout the state. The disease has been reported on ribes in most of the counties west of the Chesapeake Bay and 3 on the eastern shore. Infection on white pine was reported in Garrett, Allegany, Washington, Frederick and Montgomery Counties. In the last of these it apparently came from cultivated bushes. The damage is slight in Frederick and Washington Counties, light in eastern Allegany, and heavy in Garrett and western Allegany. Climatic conditions west of Cumberland seem to favor the growth of wild ribes and is frequently very favorable for the spread of the disease from ribes to pine. Little control work has been performed in the state since 1940 except on lands owned by the Department of Forests and Parks. The state has an adequate quarantine on cultivated ribes which is being effectively administered by the State Plant Pathologist. The situation east of Cumberland varies from favorable to almost ideal for the control of the rust while west of this point considerable work will be required in many cases to maintain adequate control. The status of blister rust control is the same as in 1946 (Table III, Page 20).

## VIRGINIA

All phases of blister rust control activities were carried on in Virginia by the George Washington and Jefferson National Forests, the Shenandoah National Park, and the Blue Ridge Parkway, as well as the Bureau and State. The work was distributed over 20 counties. A resurvey of white pine was completed in Frederick, Shenandoah, Giles, Pulaski, and Bland Counties and was begun in Montgomery, Craig and Rockbridge Counties. The resurvey shows white pine increasing both in acreage and density. Ribes eradication was carried on in most of these counties with a considerable reduction in the ribes population on subsequent workings. This was especially true on privately owned lands. A resurvey was made of Douthett State Park and no wild ribes were found in association with white pine. The rate of coverage on both resurvey and eradication was considerably more rapid per man-day during 1947 than any previous year.

Native white pine is found in commercial quantities in 33 counties covering that part of the state from the eastern slopes of the Blue Ridge Mountains westward to the Virginia-West Virginia line, and to approximately the Clinch Mountains. In this area lies the George Washington and Jefferson National Forests, as well as the Shenandoah National Park and part of the Blue Ridge Parkway. Scattered white pines are also found in many parts of the Piedmont Section. The blister rust has been reported on ribes, white pine or both in all of these counties except four. It apparently became established in the northern counties about 1924 and in the southwestern counties (Blend) about 1930-35. The rust was reported for



the first time this year on white pine in Fland and Frederick Counties although the disease is generally distributed, no widespread commercial damage has been found. High percentages of infection and killing by the rust is found in several localized areas where the low value of the pine does not justify the cost of protecting it. As of this date, it appears that adequate control can be maintained in the following counties at very low cost: Washington, Carroll, Wythe, Franklin, Montgomery, Smyth, Patrick, Pulaski, Bland, Frederick, Grayson, Henry, Floyd and Giles.

Since the resurvey on the ribes-bearing areas is incomplete the exact status is unknown but present information is that the cost of maintaining adequate control will be moderate or less in the following counties: Roanoke, Bedford, Nelson, Madison\*, Page\*, Craig, Rockbridge, Albemarle\*, Botetourt, Amherst, Greene\*, and Warren\*.

The present information indicates that considerable work will be required to maintain control of the disease in the counties of Alleghany, Augusta, Bath, Highland, Rockingham and Shenandoah.

The following recommendations are made regarding the future control work in Virginia:

1. The resurvey and necessary ribes eradication work should be completed in those counties where appreciable amounts of white pine and ribes are found in association. The counties to be surveyed are Montgomery, Roanoke, Craig, Botetourt, Alleghany, and Rockbridge. Some ribes eradication work remains in the above counties, as well as in Bland, Bath, Augusta, Rockingham and Shenandoah.
2. Consideration should be given to white pine surveys and, if necessary, ribes eradication in the counties of Warren, Page, Rappahannock, Madison, Greene, Albemarle, Nelson, Amherst, Bedford, Franklin, Floyd, Henry, Patrick and Carroll. The need for work in most of these counties is not great at present but should be considered at some future time. Wild ribes are scarce to absent in most of these counties.
3. Ways should be found to increase the amount of non-federal funds for the work. Federal funds in proportion to state cooperative funds is on approximately a 50-50 basis. If the State's present blister rust allotment could be supplemented by other funds the total amount available would be materially increased. Supplemental funds from the State Dept. of Agriculture, other State Departments, counties, towns and private sources would greatly aid the control of blister rust on private lands.
4. There should be more coordination between the blister rust control work and that of the State Forest Service and the Extension Service. Progress is being made along this line but much remains to be done.
5. Close cooperation with the Soil Conservation Service and Tennessee Valley Authority should be maintained, especially in respect to the planting and management of white pine.

\*This does not generally apply to portions of these counties which are in the Shenandoah National Park.

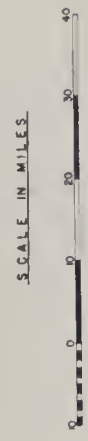


# WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: Status  
(STATUS-PROGRESS-WORK PLAN, ETC)

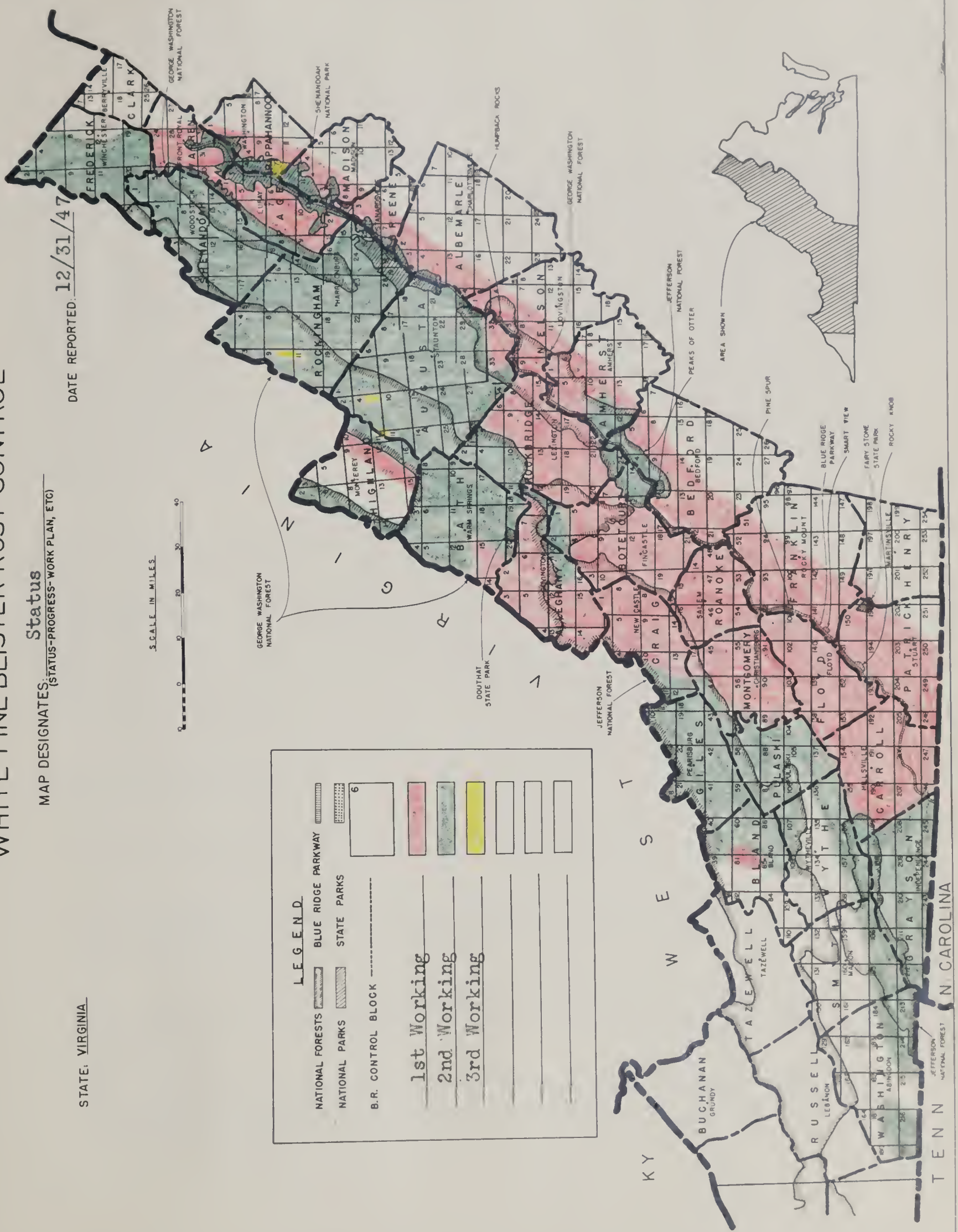
DATE REPORTED: 12/31/47

STATE: VIRGINIA



**LEGEND**

NATIONAL FORESTS	BLUE RIDGE PARKWAY
NATIONAL PARKS	STATE PARKS
B.R. CONTROL BLOCK	
1st Working	
2nd Working	
3rd Working	







The work in 1948 consisted of resurveying, checking and checking on the blisters and occasional forest, the Great Smoky Mountains National Park, the Blue Ridge Parkway and private lands. The resurvey was confined principally to Avery, Clay, Cherokee, Graham and Swain Counties. The ribes eradication work was in Jackson County and the Great Smoky Mountains National Park. Checking was in Mitchell, Yancey and Jackson Counties. The resurvey showed a large increase in the white pine since the last estimate which was about 10 years ago. Several locations of wild ribes were found in the southwestern counties which were not previously reported. Ribes eradication work, outside the Great Smoky Mountains National Park, covered a small isolated area of wild ribes near the falls on Whitewater River. The post checking which was in the vicinity of Poplar showed relatively few wild bushes present and no immediate need for reworking the area.

White pine is found throughout the mountainous counties generally west of the eastern foothills of the Blue Ridge Mountains. Most of the white pine area is on ribes-free ground but there are over 15,000 acres, principally in Ashe, Watauga, Avery, Mitchell, Yancey and Haywood Counties, which will need checking and occasional ribes eradication in the future. Since the blister rust is established in the northwestern counties thorough scouting and careful checking is necessary. At present the situation seems to be well under control and a relatively small work program will be required in the future to maintain this condition.

The following recommendations are submitted regarding the control work in North Carolina:

1. The program should continue at the present size for the remainder of the present biennium which ends June 30, 1949.
2. During 1948, resurvey, checking and, where necessary, ribes eradication work should be performed in Haywood, Madison and Buncombe Counties.
3. Careful and extensive scouting for the blister rust should be carried on each fall, especially in those counties north of Asheville.
4. Additional scouting should be carried on, especially in the southwestern counties, to secure all possible information regarding the distribution of wild ribes.

c. The close cooperation with the U. S. Forest Service, North Carolina Forest Service, Soil Conservation Service, and North Carolina Extension Service, and Tennessee Valley Authority should be continued with respect to white pine planting and management.

d. Consideration should be given to a program of eradicating cultivated ribes in the City of Asheville. The City of Asheville has thousands of beautiful ornamental shrub plants and every precaution should be taken to prevent blister rust from becoming established.

### WEST VIRGINIA

Blister rust control work in 1947 was carried on in Greenbrier, Hampshire, Hardy, Mercer, Pendleton, Pocahontas and Raleigh Counties. The tables on pages 19, 20 and 21 summarize the work accomplished during the calendar year and the status of control to date.

See Part III of this report for work on National Forest Lands.

Besides the 7,237 ribes-bearing acreage (page 20) worked on state and private lands during 1947, 1,813 acres were worked on National Forest Lands. Most of the ribes destroyed were in Hardy, Raleigh and Pendleton Counties with lesser amounts in Greenbrier, Hampshire and Pocahontas Counties. Except in Raleigh County, much of the ribes eradication work was performed on intermingled, private and federal lands. Because of the complexity of attempting to keep records of ribes culled and man-days expended by land ownership we only report such data by operating agencies. Thus, the unoperative State and Bureau work in West Virginia reflects some work on intermingled private and Federal lands within the purchase units of the George Washington and Monongahela National Forests. The same situation holds true for work performed by the Forest Service.

All other control work in West Virginia during the year was mainly confined to white pine surveys and pest checking in order to determine the present status of white pine and ribes conditions. Such surveys are essential prior to making up ribes eradication work plans.

Although control work on National Forest lands in the state has approached a full maintenance status, there is urgent need for more cooperative funds if we are to complete the second working on over 100,000 acres of private lands in Mercer, Summers, Monroe, Pendleton and Hardy Counties before the rust gets a foothold.

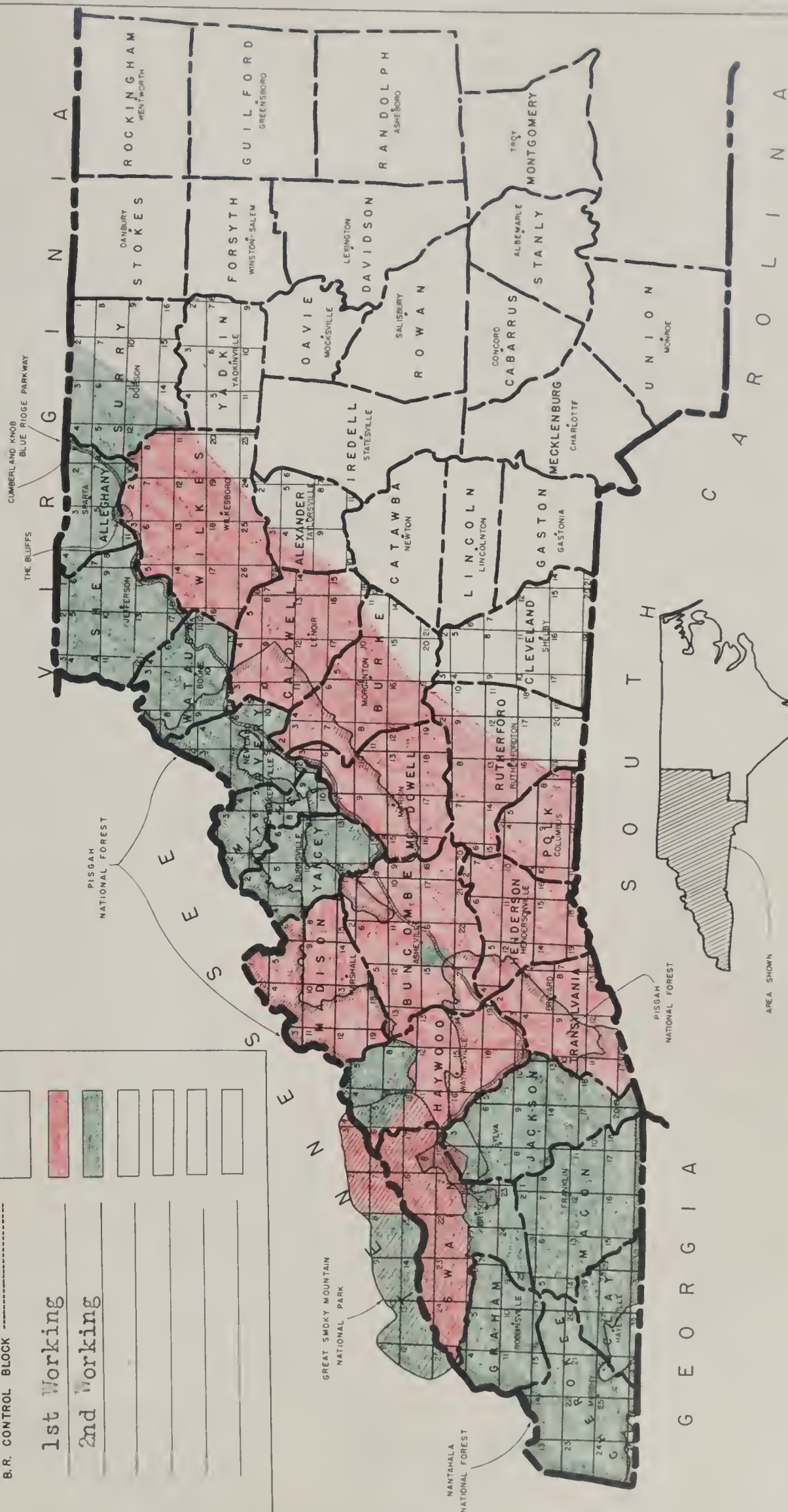
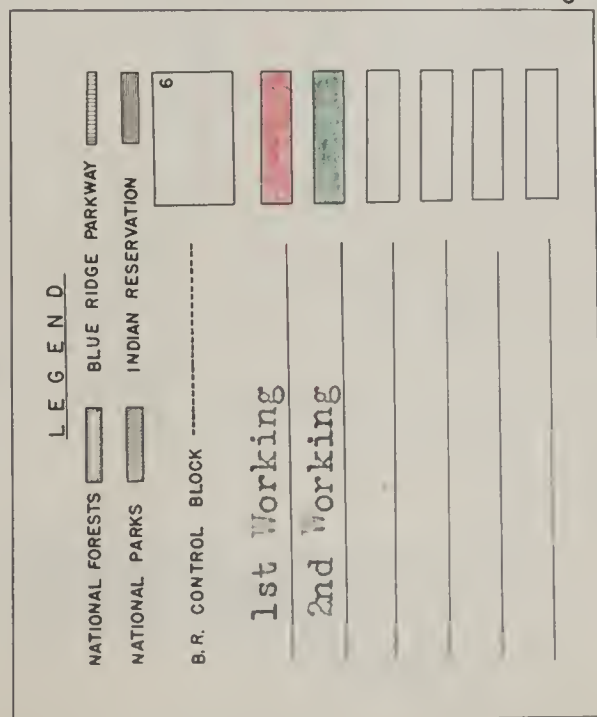


## Status

MAP DESIGNATES: (STATUS-PROGRESS- WORK PLAN, ETC)

STATE: NORTH CAROLINA

DATE REPORTED: 12/31/47



OF A CROWN

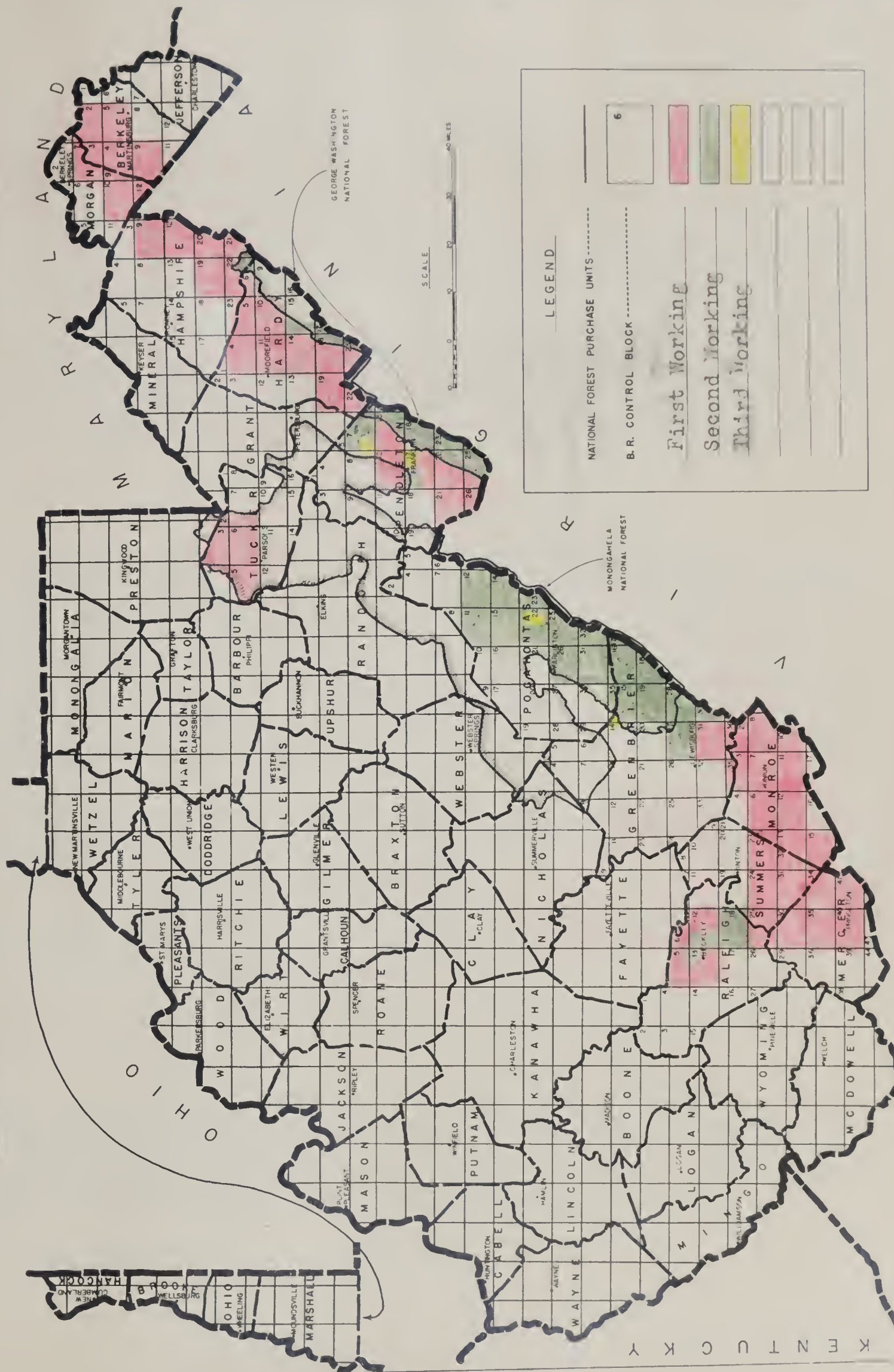




MAP DESIGNATES: (STATUS-PROGRESS-WORK PLAN, ETC.

STATE: WEST VIRGINIA

DATE REPORTED:







## CONCLUSIONS

All white pine survey work in Kentucky was completed in 1947. During the course of the survey 8 new wild ribes locations were found. Fortunately these locations were only small "pot-holes" with very few bushes. All ribes found were eradicated as well as a third clean-up job on the 85 acre Chimney Top Hollow area. The detailed grid census indicated that the original white pine and control acreage figures were over estimated. Although the grid survey shows less white pine, we now have a much better idea concerning stand densities and acre classes as well as definite locations of 8 ribes areas. Except for periodic checks, no more control work will be needed in this State for many years. White pine grows well in the Cumberland Mountains and this valuable forest tree species should be encouraged to establish itself over a much greater acreage - especially since the threat of blister rust damage is practically nil.

## TENNESSEE

All blister rust control work in Tennessee was performed in Johnson County in 1947. Under the Area Leader's supervision definite work plans were laid out and followed through on schedule by Foreman New. Since most of the ribes eradication work in Johnson County was on private lands \$1,300 of the \$3,000 allocated to the Cherokee National Forest for blister rust control work was transferred to the Sumter National Forest in South Carolina. The eradication of one heretofore unidentified wild ribes was definitely described as R. missouriensis. Several thousand of these bushes were destroyed during the year.

It is expected that all rework will be completed in Johnson County in 1948 and post checks conducted in Sullivan, Carter and Unicoi Counties to determine the status of control work.

The first white pine infection in the State was found at Millen Gey, Johnson County in 1947. Only one tree was found infected. Additional scouting for the rust should be done in 1948.

Mr. New, if available, will resume operations in Johnson County in the spring of 1948.

No great commercial damage to the native white pine stands in Tennessee is expected since most of the pine occurs on ribes-free land and ribes suppression has been effective through successive workings. Also, natural suppression of ribes by shade caused by a closing forest canopy has been a great aid in lessening ribes regeneration.

SOUTH CAROLINA

The original estimate of white pine in northwestern South Carolina was 157 acres. The blister rust control area in South Carolina included portions of Pickens, Oconee and Greenville Counties. The resurvey by the mile square grid system started in 1946 and completed in Oconee County in 1947 shows three times as much white pine in this one county as the original estimate for all three counties. White pine makes rapid growth in this section of the State and, although intensive scouting has been performed, no wild ribes sites have been found. Some cultivated ribes were destroyed in 1934 and 1935.

With no wild ribes being found in South Carolina, no more control work is planned. However, occasional scouting will be performed from time to time.

See Table III, page 21 for status of control.

GEORGIA

No control work in Georgia has been performed since February 1946, so the status of work remains the same as outlined in the 1946 report. Of the original 3,704 ribes-bearing acreage worked we now have only 506 acres in need of future attention. This acreage falls in Murray and Union Counties.

This acreage reduction was due to the fact that ribes regeneration, following initial and second ribes eradication was completely suppressed or the original ribes eradication areas are considered too far removed from white pine to warrant further working. Some of this acreage may be restored if and when white pine becomes established along the higher slopes of the Blue Ridge range. Because of repeated spring fires on the Fort Mountain State Park, ribes eradication was discontinued. White pine grows well on the slopes of Fort Mountain and R. curvatum bushes are fairly well associated with the white pine. However, white pine reproduction being extremely intolerant to even light ground fires, this valuable species has not had the proper chance to become established. Seed trees are fairly well distributed and if adequate fire protection is afforded white pine should become an important associate of the forest in Fort Mountain State Park. When this is assured, ribes eradication should be resumed on the Park so as to offer the fullest protection to the white pine. The original acreage worked on this Park was 1,867 and over 400,000 R. curvatum were destroyed. The last work performed on the Park was in 1944 with 115 acres worked. In the spring of 1945 practically the entire white pine area was burned over. Following the 1945 spring burn we conducted a resurvey and found that the original white pine acreage of 1,195 was reduced to 766 acres or a loss of over 35%. Repeated burns like this not only wipe out the young forest growth but they retard ribes regeneration unless the fire is hot enough to destroy the seed stored in the duff. A post check in 1945 after the fire showed that

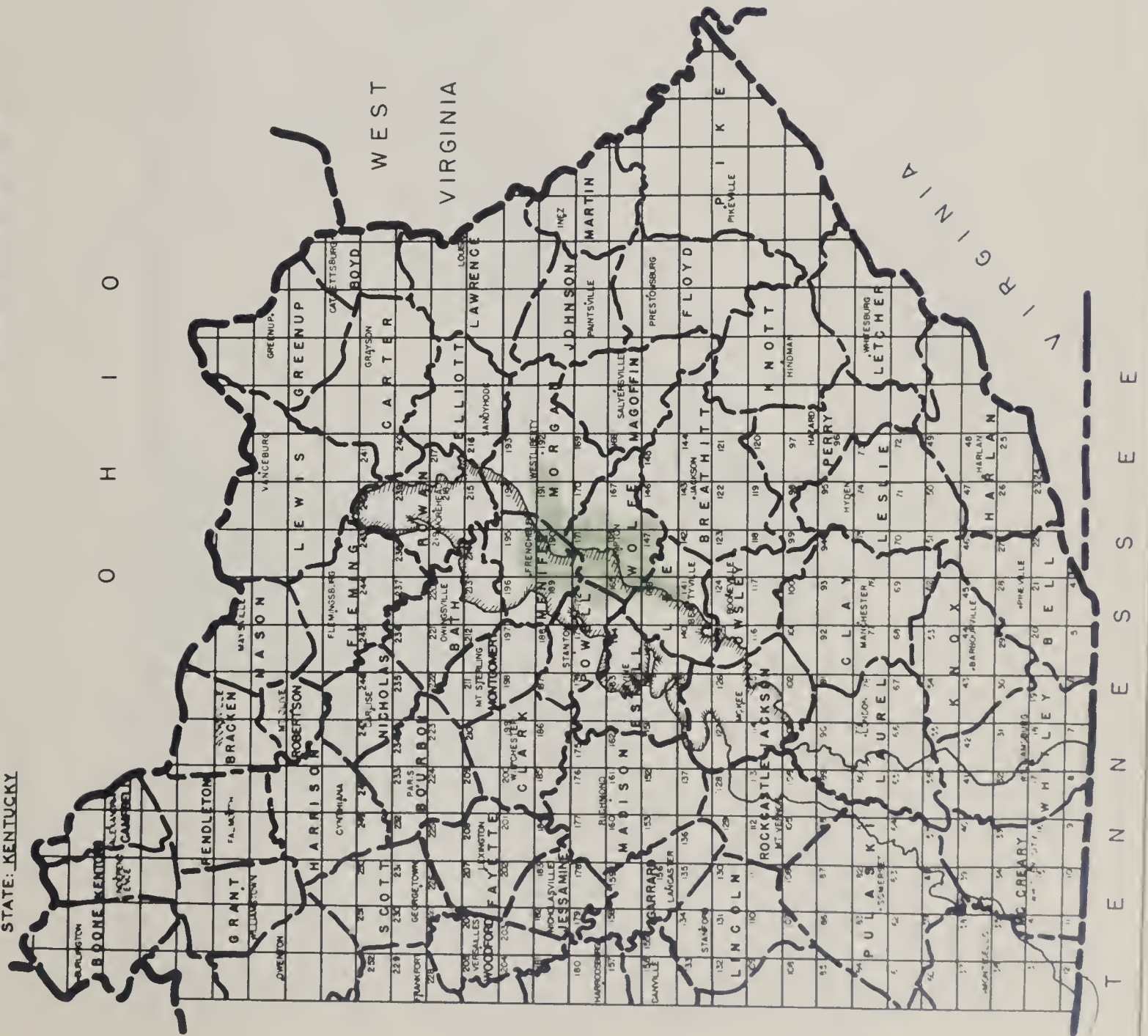


STATE: KENTUCKY

DATE REPORTED: 12/31/47

## Status

MAP DESIGNATES: Status  
(STATUS-PROGRESS-WORK PLAN, ETC.)



CS-100  
C-100  
C-100

LEGEND

NATIONAL FOREST PURCHASE UNITS

**B. R. CONTROL BLOCK**

## Initial & Second Work

A horizontal scale bar with markings at 0, 10, 20, 30, and 40 miles.

AREA 3 HOWA



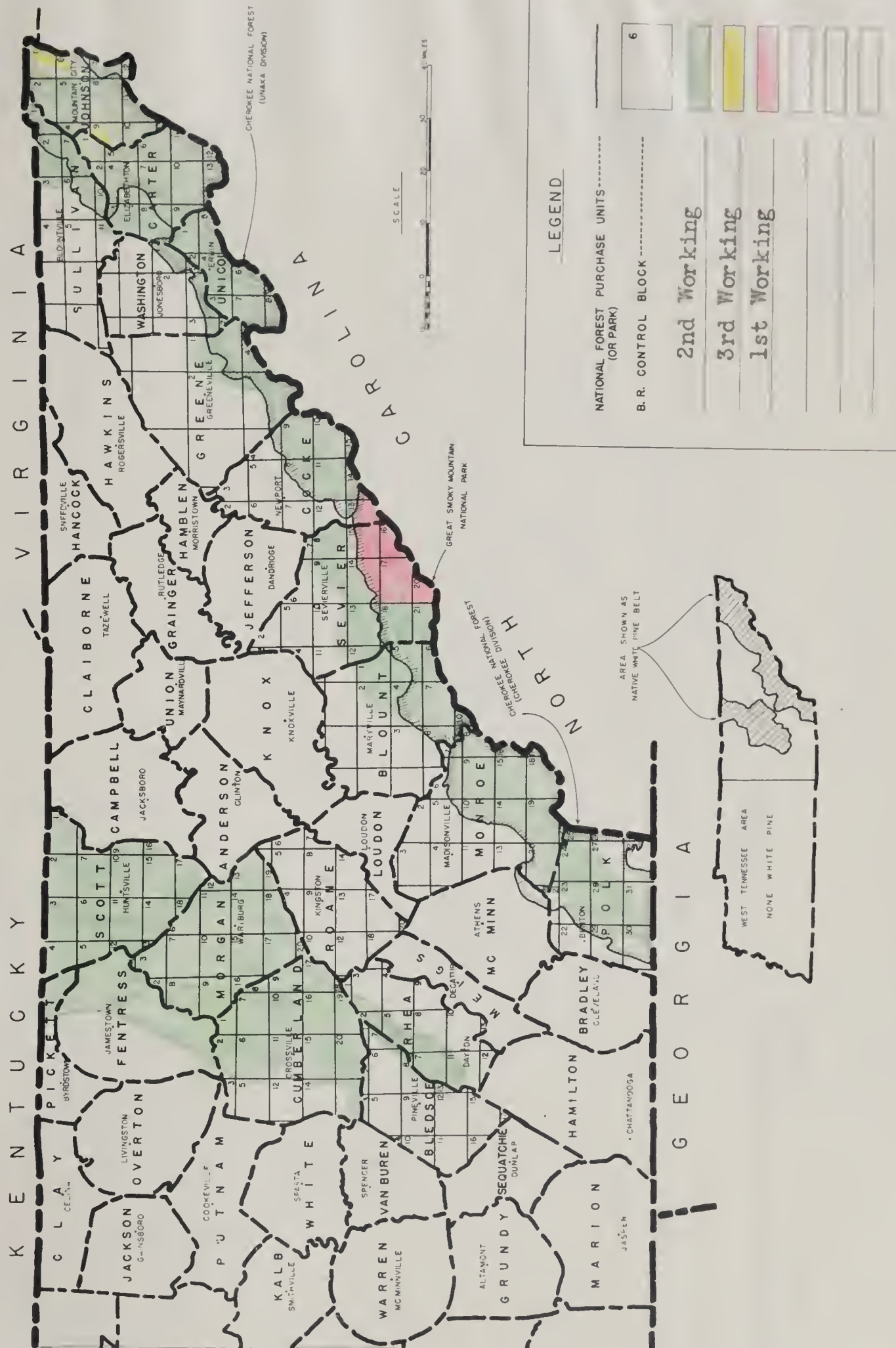


## Status

MAP DESIGNATES	<b>Status</b>	(STATUS-PROGRESS - WORK PLAN, ETC.
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STATE: TENNESSEE

DATE REPORTED: 12/31/47





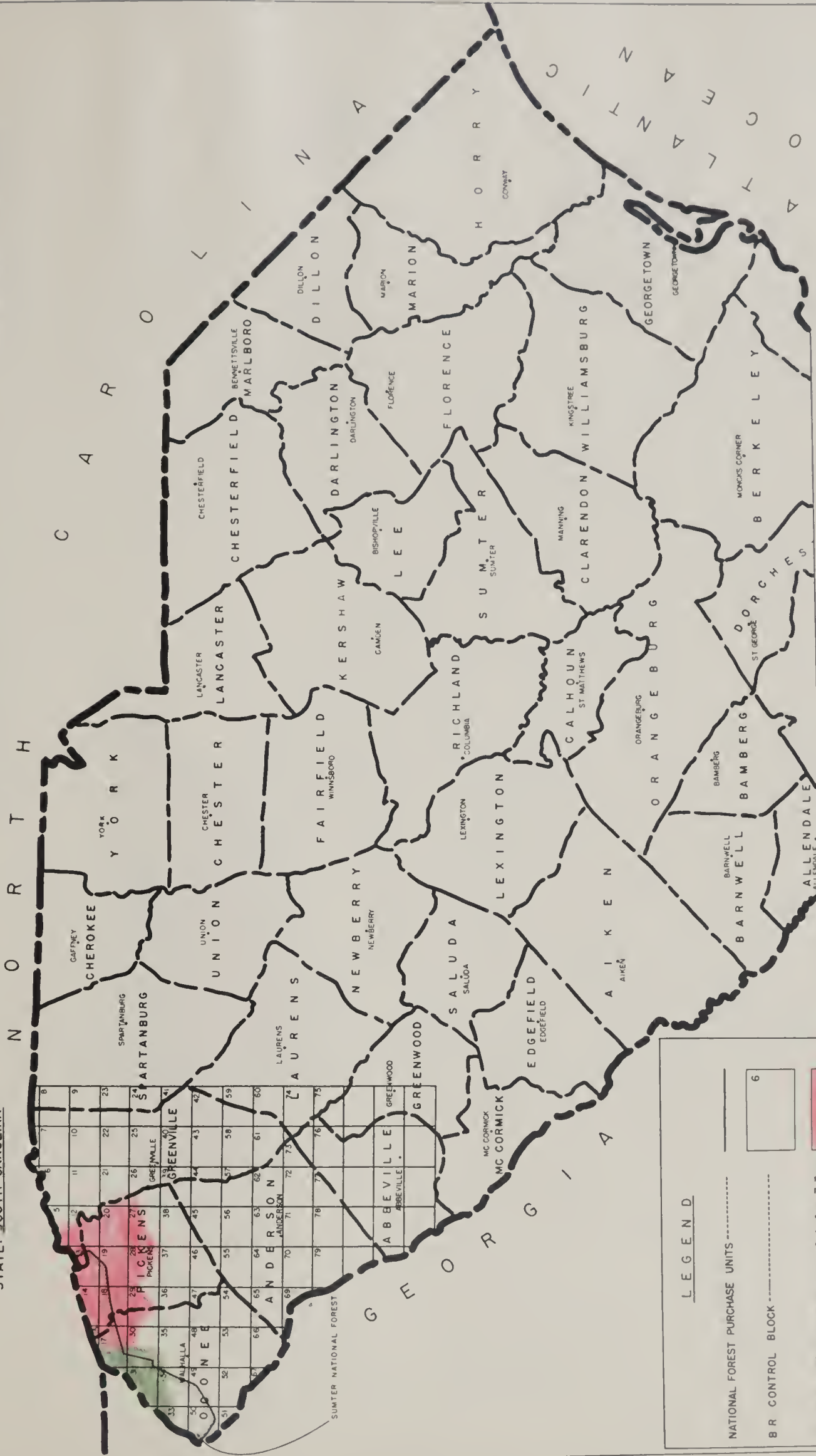


# WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: Status  
(STATUS-PROGRESS-WORK PLAN, ETC.)

DATE REPORTED: 12/31/47

STATE: SOUTH CAROLINA



**LEGEND**

NATIONAL FOREST PURCHASE UNITS -----

BR CONTROL BLOCK -----

Area Worked Initially

Area Reworked

SCALE 0 20 40 MILES





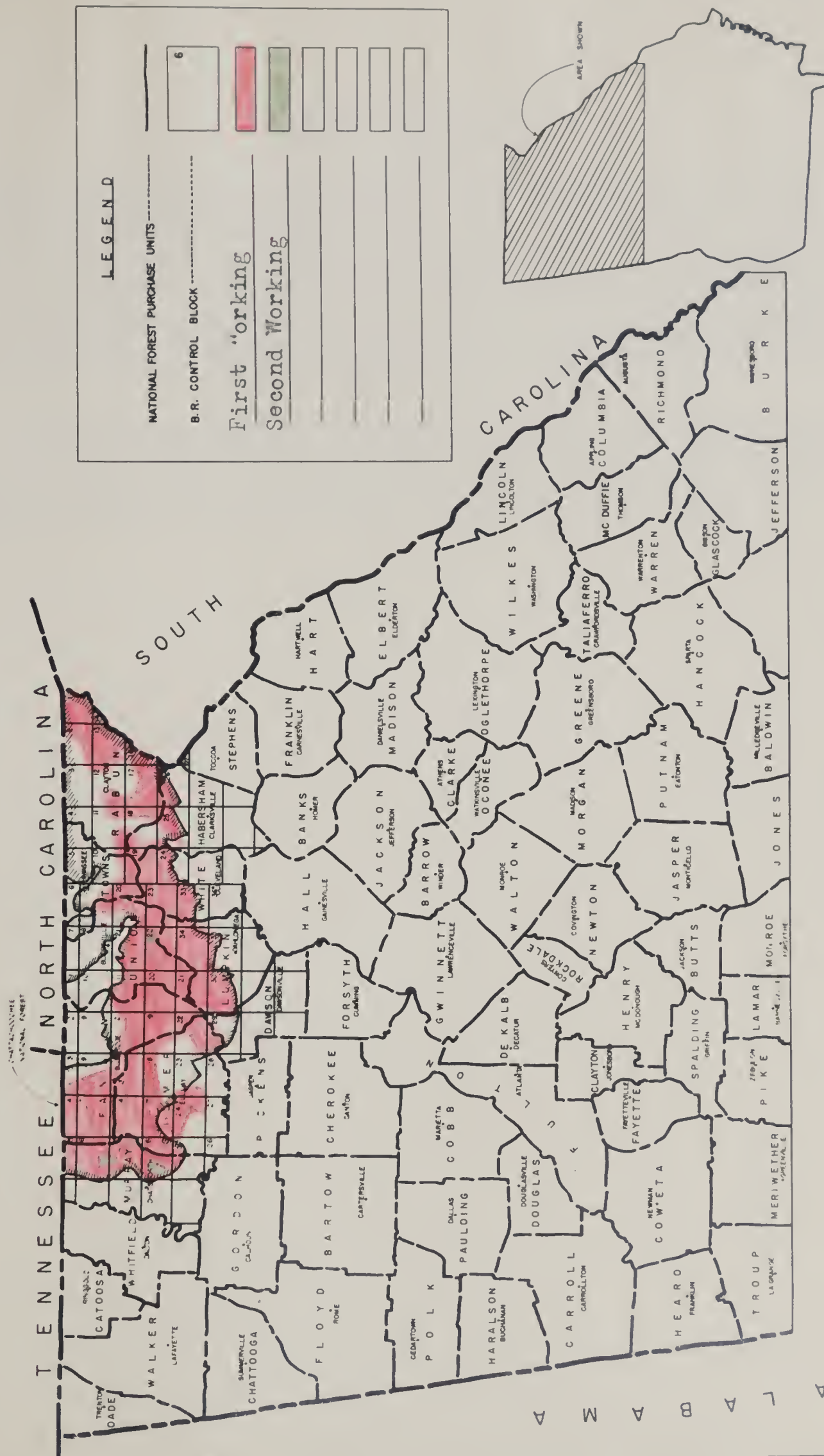


# WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: Status  
(STATUS- PROGRESS- WORK PLAN, ETC.)

STATE: GEORGIA

DATE REPORTED: 12/31/47







GEORGIA, Continued

on 75 acres checked (on a 5% check this represents 3,885 control acres covered) 899 bushes were found with a total livestock footage of 26,572 or 9-7 bushes per acre and 543.5 feet of livestock per acre. Since a standard of 25 feet of livestock per acre is allowable following ribes eradication, it is readily seen that the Fort Mountain State Park is in an unsafe condition as far as blister rust is concerned. Fortunately the disease has not been discovered in Georgia but it is creeping south and is now known as far south as McDowell County, North Carolina.

A long-range maintenance program will be made for Georgia which will take into account, periodic checks on ribes-bearing areas, performing necessary ribes eradication, scouting for the disease and checking on cultivated and abandoned cultivated ribes sites.





PART III  
REPORT OF BUREAU OF LAND CONTROL  
ON  
NATIONAL FORESTS  
1947

WOMEN PROJECT BLR 3

REGION 7

George Washington National Forest  
Jefferson National Forest  
Monongahela National Forest  
Cumberland National Forest

REGION 8

Pingah National Forest  
Montabala National Forest  
Chardlas National Forest  
Sawyer National Forest  
Chatsahoochee National Forest







A LARGE WHITE PINE

MONONGAHELA NATIONAL FOREST, WEST VIRGINIA





TABLE I

Summary of Ribes Eradication By Forest Service in 1947

FOREST SERVICE	ACRES Ribes Free	ACRES WORKED ON RIBES-BEARING LANDS				MAN-DAYS RIBES ERADICATION			RIBES DESTROYED		
		First Working	Second Working	Other Working	Total Workings	First Working	No- Work	Total	First Working	No- Work	Total
Geo. Washington	101,521	12,134	8,063	2,141	20,338	1,967	2,815	5,586	215,497	225,810	441,307
Jefferson	104,143	156	-	-	156	64	-	64	5,888	-	5,888
Monongahela	1,245	-	135	85	220	-	29	29	-	270	270
Comerford	33,790	10	-	85	95	6	8	14	15	36	44
TOTAL F. S. REGION 3	243,104	12,589	8,258	2,272	20,917	5,039	2,856	6,801	221,890	226,096	449,086
Pisgah	1,808	-	-	-	-	-	-	-	-	-	-
Nantahala	37,777	-	-	-	-	-	-	-	-	-	-
Cherokee	682	-	-	450	450	-	133	133	-	6,364	6,364
Savannah	48,531	-	-	-	-	-	-	-	-	-	-
TOTAL F. S. REGION 3	88,808	-	-	459	459	-	133	133	-	6,364	6,364
TOTAL FOREST SERVICE	334,613	12,589	8,258	2,731	21,578	5,039	2,735	6,817	221,890	232,056	454,477

+ Includes some blocked out by survey and port checks.

TABLE II

## Summary of Acreage Worked on Forest Service Lands - 1947

NATIONAL FORESTS	ACRES RIBES-FREE	ACRES WORKED ON RIBES-BEARING LANDS				TOTAL ALL WORKINGS
		First Working	Second Working	Other Working	Total Ribes- Bearing	
George Washington	49,155	6,900	3,502	2,001	12,403	61,558
Jefferson	10,669	60	-	-	60	10,729
Monongahela	1,645	-	148	66	214	1,859
Timberland	7,934	10	-	65	75	8,009
TOTAL FOR SER. REGION 7	69,403	6,970	3,650	2,132	12,752	82,155
Piegah	1,609	-	-	-	-	1,609
Nantahala	68,220	7	-	-	7	68,227
Cherokee	344	-	-	1	1	345
Sumter	40,492	-	-	-	-	40,492
TOTAL FOR SER. REGION 8	110,665	7	-	1	8	110,673
TOTAL FOREST SERVICE	180,068	6,977	3,650	2,133	12,760	192,828

\* Includes acres blocked out by survey and post checks.







## GEORGE WASHINGTON NATIONAL FOREST

The resurvey is completed on the Dry River Ranger District. It is nearly complete on the Lee and Deerfield Districts. The Warm Springs and Cedar Districts are about 75% and 10% complete, respectively. Again, large increases were noted in white pine and control as compared to the original survey of some 25 years ago. The present indications are that the completed resurvey will show white pine in appreciable quantities on about 20% of the entire forest. Good progress is being made in the rate and effectiveness of control but at least 2 or 3 more years will be required before much of it can be placed on a maintenance basis. About 10% of the control area on of this date has not been worked initially. These percentages are about 11 and 9 respectively for the year of the Forest in Virginia and West Virginia.

During 1947 the resurvey was completed on the portions of the Lee and Dry River Districts falling in West Virginia. In Virginia it was practically completed in the Lee and the Deerfield Districts. Considerable progress was made in the Warm Springs District. Table I, page 38, shows the amount of land covered by the crews being paid from Forest Service funds. This acreage includes some intermingled privately owned land. Table II, page 39, shows the acreage worked on Forest Service lands. More acres were covered on ribes eradication in total and per man-day than last year. The ribes per acre were usually less. Regular ribes checks made after ribes eradication invariably showed satisfactory work by the crews.

The cost per acre on ribes eradication is less than last year since less ribes per acre were found and nearly all men employed were experienced in the work. The cost per acre on survey was slightly less in West Virginia and an actual increase was noted in Virginia. The wage rates, as well as operating costs, were higher in 1947 than during any previous year.

The same excellent cooperation was received from the Forest Service as in previous years. We continue to use their shop and storage facilities at Bridgewater as well as other facilities. We, in return, cooperate with them in every way possible, especially in fire control. During the year very few of our men were needed but every effort was made to have them available should an emergency arise.

The following is a brief resume of the work plans for 1948 insofar as available funds permit:

1. Complete ribes eradication in West Virginia.
2. Complete ribes eradication on the Lee Ranger District, and as much as the Dry River Ranger District as possible.
3. Do as much ribes eradication as possible in the Deerfield and Warm Springs Districts.



4. Complete the resurvey in the New Springs District and in as much as possible in the resurvey in the new district which will consist of Allegany and part of Botetourt Counties.

5. Complete the disease survey begun last year.

### JEFFERSON NATIONAL FOREST

The status of control as shown in Table III, page 40, represents an increase of about 4,500 acres of white pine and 11,000 acres of control area. The resurvey is completed on all the Jefferson National Forest holdings south of Craig and Roanoke Counties. The Glenwood Ranger District is also complete. Of the 3,654 acres surveyed, but not reworked, approximately 1,500 acres are believed to be ribes-free, or possibly not worth protecting. The ribes eradication work is, therefore, closely following the resurvey. The status of the rust on Forest Service lands remains much the same as last year. However, an infection center was found on privately owned land covering some 50 acres and originating between 1930 and 1935 in the vicinity of Ruston in Bland County.

The work in 1947 consisted primarily of resurvey, ribes eradication and post checking. (See Tables I and II for summary of 1947 ribes eradication work.) During the summer the ribes-bearing lands in the southern portion of the Holston and Wythe Ranger Districts were post checked. No immediate need was found for reworking most of these areas. The survey work by crews on Forest Service funds worked within the purchase areas which included a high percent of intermingled privately owned land. The ribes eradication work was confined to work on Forest Service ownership or private lands immediately adjacent.

The overall average cost per man-day was considerably higher in 1947 than in 1946. This is due to the increased wage rates, as well as in gasoline and other operating costs. The average cost per Acre on eradication, however, was considerably less while the cost per acre on survey increased from 7 to 8 cents.

The work schedule for 1948 is as follows:

1. Complete the resurvey on the forest before June 30, 1948. There remains a small amount of work in Montgomery, Roanoke and Botetourt Counties and all of Craig County.

2. Do the necessary ribes eradication in the New Castle Ranger District. Since it is likely that a small amount of work will be found necessary in Montgomery County and some in Craig County.

3. Review the values involved on the 5,254 unworked acres which are in Pulaski, Pland Wythe, Montgomery and Grayson Counties.

4. Do such files eradication work as is considered advisable first in Craig, Montgomery, Pulaski and Elbert Counties then in Wythe and Grayson Counties. It is doubtful that this can be completed by June 30, 1948 but little, if any, should remain unworked by September 30, 1948. The present indications are that a greatly reduced program will be adequate to maintain control of the blister rust after the 1948 season. This is based on the assumption that all of Allegheny County and part of Botetourt will become a part of the George Washington National Forest. Any land purchases in the future can change the situation.

#### MONONGAHELA NATIONAL FOREST

The second working on the Monongahela National Forest was completed in 1947 as scheduled and the entire white pine control area is now placed on maintenance. Systematic post checks will determine what areas will be included in a third working under the maintenance program. These checks will be made far enough in advance so that definite work plans can be submitted to the Forest Service for consideration and approval. Area Leader Nelson is preparing a detailed paper on the blister rust control work accomplished on the Forest. This paper should be ready for distribution sometime in 1948. Table III, page 40, gives the status of control to date.

#### CUMBERLAND NATIONAL FOREST

A detailed resurvey program of the white pine lands on the Cumberland National Forest was begun in 1945 and completed in June 1947. Although the resurvey showed a reduction in white pine acreage and total control acreage for the State as a whole, there was some increase on Forest Service lands. The following table shows the results of the original survey in 1935 and the resurvey completed in 1947 on Forest Service lands.

TABLE IV  
Status of Survey as of December 31, 1947

WHITE PINE IN CONTROL AREA			CONTROL ACREAGE			ACRES (PIES BEARING WORKED)	
Final Survey	Re-Survey	Percent Increase	First Survey	Re-Survey	Percent Increase	Initial	Rework
14,475	16,920	17.2	50,566	52,000	2.7	10	65



Because of the small amount of ribes-bearing land and the small number of ribes found the white pine stands in the Cumberland National Forest are relatively safe from blister rust damage. Although periodic inspections will be made by Bureau personnel, no more work is contemplated in this state for the near future.

### PISGAH NATIONAL FOREST

The status of control is shown in Table III, page 40. Nearly all of the blister rust control area was worked once and most of the ribes-bearing portions were worked two or more times. Most of the white pine is growing in areas naturally free of wild ribes. The two principal problem areas are (1) in the vicinity of Lost Cove, Yancey County and Shinbone Creek, in Mitchell County, and (2) in the vicinity of Pigeon River in Haywood County. In each of these as well as a few other sections the ribes potential is only moderate. Since the disease is present in the vicinity of the forest every advantage should be taken of the favorable position and the growth of white pine favored in all areas favorable to it.

During 1947 only post checking and some survey work was carried on in Mitchell and Yancey Counties. There did not appear to be any immediate need for any reworking. Since some of the checking was performed late in the season some scouting should be carried on next spring but it is not likely that any work will be required in this vicinity for a few more years.

During 1948 the white pine areas in the Pigeon River drainage in Haywood County will be post checked and such ribes eradication as is necessary will be done. A similar check will be made of the few areas in Buncombe County and additional examinations will be made on a few questionable locations in the Lost Cove-Shinbone area. If no ribes eradication work is found necessary a comprehensive report of the situation on the forest together with a long-range maintenance work plan will be prepared.

### NANTAHALA NATIONAL FOREST

Only a small amount of blister rust control work will be required on this forest for several years which is now on maintenance.

During the period of 1933 to 1938 a preliminary white pine and ribes survey was made of the Nantahala National Forest. The estimate indicated that white pine was present in appreciable amounts on some 23,000 acres. Wild ribes were found at several locations at elevations far above the white pine range and also in association with white pine in the following locations on or near Forest Service lands: Cullasaja Falls, Nantahala River, Queens Creek and Whitewater River Falls.

Since no blister rust was found any farther south than central Virginia, the work was discontinued except for occasional scouting for the disease. In 1941 the blister rust was found on ribes in several locations in northwestern North Carolina. This indicated that the disease was definitely moving southwest. Following this, more intensive scouting was carried on and more infection was found in southwestern Virginia and northwestern North Carolina. In the fall of 1945 an old center of blister rust on white pine was found in an isolated white pine grove in Ashe County, North Carolina.

From October 1945 until June 1947 a detailed resurvey of the situation was conducted in the Nantahala Purchase Unit, covering Forest Service lands in all counties within the Unit except Transylvania County. A separate record was made of the findings on the Forest Service lands as of the ownership at the time. Comparative results of the 1933-38 and 1945-47 surveys are shown below:

C O U N T Y Forest Service, Inter- mingled & Private Lands	OLD ESTIMATE 1933-1938		RESURVEY 1945-1947	
	White Pine Acres	Acres Control	White Pine Acres	Acres Control
Cherokee	2,147	21,260	13,723	29,734
Clay	103	1,025	2,269	4,353
Graham	2,813	11,575	3,835	21,230
Jackson	19,306	59,079	39,798	54,989
Wayne	36,682	66,504	28,916	45,994
Swain	5,306	16,667	208	1,080
TOTAL ALL LANDS	66,357	176,110	93,799	157,380
Percent Increase or Decrease on Resurvey			41%	-13%
Nantahala National Forest Lands (included above)				
FOREST SERVICE ONLY ALL COUNTIES ABOVE	23,771	47,240	42,046	62,954
Percent Increase or Decrease on Resurvey			77%	-33%



In explanation of the table on page 43:

1. The "White Pine Acres" include well-stocked and pure white pine stands and scattered areas where conditions seem to be favorable for its increase in density.
2. The "Control Acres" represent the white pine acreage and a surrounding protective zone 900 feet in width.
3. White pine acreage increases can be attributed to:
  - (a) Improved survey methods.
  - (b) Extensive white pine reproduction largely resulting from the heavy white pine seed crop in 1938 and forest fire control.
  - (c) A more complete coverage due to the construction of roads and trails since the first survey was made.
  - (d) Some of the increase in Forest Service lands is due to land acquisition between the time of the two surveys.
4. The above does not include a recent Forest Service purchase in Transylvania County because this area is believed to be free of wild ribes. It is planned to include this area when work is begun in that County.

The situation as indicated by the resurvey may be briefly described as follows.

Wild ribes are known to be present over large areas and often in heavy concentrations at the following locations, all of which are generally shown the natural range of white pine: Pilot Mountain, Standing Indian, Chimney Gay Mountain, Nayah Bald, Santeeish Creek, West Buffalo Creek, Snowbird Creek, McDaniel Bald, Sassafras Gap (NE Jackson), Balsam Mountain and Tennessee Ridge.

Undoubtedly there are other high mountain ranges or peaks where wild ribes are present with a few small scattered white pine stands or isolated trees growing in association with such ribes. In such cases control work would not be economically justified.

On favorable sites wild ribes occur in relatively light concentrations at lower elevations sometimes in association with good white pine. The known locations are: Gullins Falls, Whitewater Falls, Glenville Lake, Nantahala River, Quana's Creek and Tuckasee Falls.

This list is believed to be complete. The ribes at Whitewater River Falls were eradicated in June 1947.

Cultivated ribes species are often found at abandoned homesteads. Sometimes these bushes continue to live and spread in the immediate vicinity for many years, and frequently such ribes are found in association with

white pine subsequently planted in old fields, or naturally reproduced from nearby seed trees.

These ribes can usually be located by a skilled scout at such home-sites in the early spring and eliminated at a relatively low cost. All or most of this work is completed on the Nantahala National Forest where white pine plantations are present but little or nothing has been done at other places.

The blister rust disease has been found on white pine and wild ribes 70 miles north of the Forest in McDowell County. The spread of the rust southward follows the high mountain slopes where temperature and moisture conditions are favorable for rust development and spread. Because of this situation it is impossible to keep the disease out but we can offer adequate control to the better white pine stands which generally grow well below the main ribes belt. This is accomplished by destroying any wild ribes in the near vicinity of good white pine as well as making close checks for cultivated bushes.

Under a long-range maintenance program, which is now being considered, the future control work on the Nantahala Forest will be the completion of the resurvey of the Toccoa River drainage, systematic scouting for abandoned cultivated ribes, obtaining a complete picture of wild ribes distribution and annual scouting for the presence of the rust. A small reworking job is also slated on a 7 acre tract near Whitewater Falls.

#### CHEROKEE NATIONAL FOREST

After making numerous checks over the original ribes-bearing areas within the blister rust control area of the Cherokee National Forest, it was discovered that very little additional work is needed at the present time due to the following conditions (1) much of the control acreage originally worked contains too much scattered white pine to warrant protection; (2) many original work areas are too far removed from white pine (the chances for long distance spread of the disease from ribes to pine are remote); (3) little or no ribes regeneration since the last working. Natural suppression by a closing forest canopy has been an important factor in preventing ribes regeneration.

Thus, most of our work on the Cherokee National Forest during the last few years has been making detailed white pine surveys and carefully checking all ribes-bearing areas which fall close to or are in good white pine sites. As the result of this survey so far completed our work plans have been reviewed with the result that we have over 50% less acre work areas than the original records show. Our post checking work is not yet entirely complete, since there are still several areas to check in the Watauga and Unicoi Districts, mainly in Sullivan, Johnson, Carter and Unicoi Counties.



During 1947, 4,600 acres were worked on pest abatement using 377 man-days. The acreage covered included Forest Service and intermingled private lands. Of this acreage 450 acres were worked by Forest Service crews who destroyed 6,384 wild ribes using 155 man-days. It is hoped that the remainder of the ribes eradication work in Johnson County will be completed before June 30, 1948. Most of the remaining work is on the slopes of Doe Mountain.

Although the first blister rust infection on white pine was found in 1947, there appears to be no immediate danger of any widespread damage to the white pine stands in the future since ribes suppression through successive workings and by natural means have greatly minimized such danger. However, out of a total control acreage of 484,572 acres on Forest Service lands there are 4,113 acres of ribes-bearing land which will need watching. If white pine continues to increase in acreage and density during the next decade as it has in the past there is the possibility that we may have additional acreage to work at some future date. Our survey shows that on the Cherokee National Forest there are 250,378 acres of white pine 70% to 80% of which is in the reproduction class.

#### SUMTER NATIONAL FOREST

A resurvey of the white pine-bearing lands on the General Pickens Ranger District of the Sumter National Forest was begun in 1946 and completed in 1947. Although no wild ribes areas were located on the resurvey we were able to obtain detailed data on white pine distribution, stocking and size classes. After the field data is carefully checked and summarized the white pine data will be made available to the Forest Service. The following table gives the status of survey work as of December 31, 1947 with a comparison between the first and second survey.

TABLE VI

Status of Survey As Of December 31, 1947

WHITE PINE IN CONTROL AREA			CONTROL ACREAGE *			ACRES ON MAIN- TENANCE	COST OF CONTROL WORK	COST PER ACRE MAPPED
First Survey	Re- Survey	Percent Increase	First Survey	Re- Survey	Percent Increase			**
2,075	18,794	805.7	3,700	53,862	1,355.7	53,862	\$7,848.27	\$0.14

\* White pine acreage plus a 900 foot protective zone.

\*\* Actually the cost per acre mapped is less than \$0.14 since a good deal of intermingled private land was also covered by the Forest Service crews.

Except for occasional scouting no more work is contemplated for the Sumter National Forest. White pine makes excellent growth and with continued fire protection plus the absence of wild ribes this species has every advantage of becoming a very important forest tree associate in the mountain region of South Carolina.

#### CHATTAHOOCHEE NATIONAL FOREST

As on State and private lands in Georgia, blister rust control work on the Chattahoochee National Forest was completed in February 1946. The forest is on full maintenance and only 330 acres of the total control acreage of 349,903 needs periodic examination. However, if white pine reproduction continues to spread along the upper slopes of the Blue Ridge Mountains, there is the possibility that additional ribes eradication may have to be performed at some future time. White pine grows faster in north Georgia than in most any other white pine growing state of the Southern Appalachians and because of the absence of wild ribes throughout the best white pine stands, there should never be any appreciable damage caused by the blister rust disease. However, before too long there should be another check made for cultivated ribes and abandoned cultivated bushes. This work is being considered under a long-range maintenance program.



PART IV

REPORT OF BLISTER RUST CONTROL

OF

NATIONAL PARKS

1947

WORK PROJECT BIR 4

The Shenandoah National Park  
The Blue Ridge Parkway  
The Great Smoky Mountains National Park

These reports were prepared in cooperation with  
the respective Park officials





TABLE I

## Summary of Ribes Eradication By National Park Service in 1947

NATIONAL PARK State	ACRES RIBES FREE	ACRES WORKED ON RIBES-BEARING LANDS				MAN-DAYS RIBES ERADICATION			RIBES DESTROYED		
		First Working	Second Working	Other Working	Total Workings	First Working	Re- Work	Total	First Working	Re- Work	Total
Shenandoah Va.	771	-	-	911	911	-	447	447	-	45,000	45,000
Blue Ridge Parkway N.C.	4,442	-	856	-	856	-	192	192	11	2,434	2,445
		-	-	-	-	-	-	-	500	-	500
Great Smoky Mountains Tot.	4,442	-	856	-	856	-	192	192	511	2,434	2,945
N.C.	247	83	57	248	388	71	130	200	897	1,576	2,473
Tenn.	6,319	-	-	-	-	20	-	20	138	-	138
Tot.	6,565	83	57	248	388	91	130	220	1,035	1,576	2,611
TOTAL PARK SERVICE	11,779	83	913	1,159	2,155	91	768	859	1,657	21,536	23,193

\* Includes acres blocked out by survey and post checks.

NOTE: No acreage is recorded on cultivated ribes eradication which accounts for the 541 ribes pulled on the Blue Ridge Parkway on first working. The same holds true for the Great Smoky Mountains National Park in Tennessee. When bushes were pulled by Park Rangers or field experimenters in man-days are shown.





TABLE III

Status of Acres Worked on Ribes Eradication on Park Service Lands (1)

NATIONAL PARK State	TOTAL ACRES		A C R E S			On Value Reserves		PARK SERVICE	
	White Pine	Control	First Working	Other Workings	417 Workings			Acres Submerged	Days
Shenandoah Va.	5,764	16,880	13,805	6,438	20,305	1,754	1,288,870	80,345	
Blue Ridge Parkway	830 3,333	2,581 8,060	2,581 5,060	856 -	3,437 8,060	1,544 8,060	22,530 27,338	850	
Great Smoky Mountains	4,299	10,641	10,641	856	11,497	9,594	38,697	622	
	8,364 55,762	20,073 83,027	20,073 83,027	799 -	20,872 83,027	10,518 83,027	59,535 192	870 204	
Tot.	84,626	103,100	103,100	799	103,898	103,545	89,735	1,331	
TOTAL PARK SERVICE	72,689	130,621	127,546	8,153	135,699	115,693	1,817,813	28,797	

(1) All acres listed in this table are net acres. Acreage discontinued because of fire, disease, poor quality white pine, etc., are not shown. Ribes and man-days listed in above table are gross figures and represent work performed by the National Park Service. Some of the fire destroyed and man-days expended were on intermingled private lands. No account is made of separate ribes pulled and man-days by land ownership.

## SHEPARDSON NATIONAL PARK

### Status of Control

In general, adequate control is being maintained especially on the higher priority pine areas on the Park. The rife control is definitely more than that needed several years ago, but the Park will still remain one of the major control jobs in the region. Of the original 59 white pine areas in the Park, 15 have been discontinued, 40 will be definitely retained, and 5 are being tentatively retained. In those cases such was surveyed some years ago on a 25% basis. It is planned to conduct a 5% post check which may result in discontinuing parts of the areas or possibly expanding them.

Table 111, page 53, gives the status of control which is somewhat the same as last year. Only about 13% of the acreage worked to date has been placed on maintenance.

The "Areas on Maintenance" is defined as follows: Control areas on which very little rife eradication will be necessary to protect the present stand of white pine to maturity except where major ecological changes occur such as fire or logging. Since maintenance does not mean abandoning an area there actually should be more acreage in this Park placed in this category. The use of maintenance in the Southern Appalachian Region only means a switch from a full active program where areas must be worked every 2 or 3 years to a program where areas can be left 5 or more years and will only require small crews to maintain them.

### Work in 1947

During 1947 survey work was conducted on 1,723 acres of which 1,292 contained white pine. In addition, checking was carried on on 1,109 acres. Rife eradication work is shown on Table 1, page 54.

Rife eradication was performed on Area No. 3 - Skyland, No. 4 - Big Meadows, No. 5 - Lewis Mountain and No. 15 - Neighbor Mountain. During the year a total of \$6,132.41 was expended for labor, supervision, and miscellaneous operation expenses. There remains a balance of approximately \$1,021.29 available for the period of January 1 to June 30, 1948. The average cost per acre-day during 1947 was higher than for any previous year during which heavier rife control work was performed on the Park. The wages paid were raised from \$.85 per hour to \$1.25 per hour, which was the highest in the history of the Park for this type of work. However, the quality of labor was

10 It is hoped that this statement of maintenance will clarify the general misunderstanding in the use of this term.

J. C. Hall, Regional Leader.



generally better than previous years. The work performed per man-day compares favorably with that of previous years in the Park as well as other projects in the Region. There is, of course, wide variation from year to year where relatively few areas are worked. This is due largely to the spent training inexperienced men and in working areas in which topographic and forest cover conditions vary greatly.

#### Work Schedule For 1948

During 1948 it is planned to resurvey some 1,810 acres in or near the following areas:

<u>Area No.</u>	<u>Local Name</u>
30	Ivy Creek
56	Fork Mountain
57	Dean Mountain
58	Naked Creek
59	Powell Mountain

It is planned to conduct post checks on Area No. 11 - Big Run, No. 2 - Pinnacles, No. 52 - Moorman River, No. 49 - Gap Run, No. 22 - Hawkbill Creek, No. 40 - Pignut Mountain, No. 17 - Elmallow Gap, all of which cover some 2,830 acres. The present indications are that ribes eradication work will be required on the following areas: No. 1 - Hawkbill, No. 12 - Doyle River, No. 13 - Rocky Bar, No. 19 - Kettle Canyon, No. 31 - Simmons Gap, No. 55 - Gravel Spring Gap, and No. 17 - Elmallow. These areas include about 2,917 acres, which is estimated that crew work will be required on 1,000 to 1,500 acres. It is doubtful if the above work schedule can be followed unless additional funds can be found to supplement that now available for the first half of the calendar year.

During the year, Mr. Robert B. Moore, Forester, who has been in charge of the blister rust control work on the Park from the beginning was transferred to the Regional Office in Richmond, Virginia. He was succeeded by Mr. L. Y. Berg, who has had considerable experience in blister rust control work several years ago on the Shenandoah Park. Mr. E. F. Benton has been employed as a checker in charge of the field operations. It is expected that the work will continue without any loss in quality or quantity as the result of Mr. Moore's leaving. Messrs. Berg and Benton are capable and interested in the work and Mr. Moore will be available on short notice to assist with any problems that may arise.

BLUE RIDGE PARKWAY

## Status of Control

During the year there was no survey work conducted on Parkway lands which would change the over-all picture regarding the white pine acreage, control acreage, or general status. Table III, page 53, shows the status which is much the same as last year except for additional Parkway land surveyed in North Carolina along with the regular work on private lands.

In Table III, page 53, the white pine acreage figures represent the land owned by the Parkway on which there is, according to Parkway officials, sufficient white pine to justify control work. This is usually determined by the aesthetic value of the white pine rather than the number or the size of stems per acre. The control acreage represents this pine plus a surrounding zone of some 900 feet. This often includes land not owned by the Park Service but is a part of the control problem.

Both the white pine and the control acreage as shown in the table represent only that part of the entire Parkway that was surveyed to date. The survey is approximately current with the grading which is estimated to be about 70% complete.

The "Acres on Maintenance" represents that part of the present control area on which no wild ribes were found. Cultivated ribes have been found at numerous homes and homesites. The continued checking for these cultivated ribes will require a small amount of time for several years.

During the spring of the year, Mr. J. R. Tomlinson was employed a few weeks in North Carolina. He conducted a ribes survey of the Parkway and adjacent lands from the Virginia-North Carolina line southward through section 2F-2 in the vicinity of Blowing Rock. Ribes were found at 27 locations and all were destroyed except one which was eradicated later by Ranger personnel. A total of 500 bushes were destroyed in North Carolina.

In Virginia the Ranger staff destroyed 41 cultivated bushes between the state line and Adney Gap. A post check was made of the control areas at Clark's Gap, Irish Gap, and Tye River Gap by Mr. Charles A. Rodamer, of the Bureau of Entomology and Plant Quarantine. It was found that no rework was necessary at Clark's Gap but the ribes comeback was sufficient in the other two areas that some work was necessary, particularly in view of the presence of the rust on pine in those localities. Mr. Eugene Martz, of the Bureau of Entomology and Plant Quarantine, was loaned to the Park Service to act as foreman on this eradication work. A total of 856 acres were reworked and 3,486 wild and 151 cultivated bushes were destroyed, with 192 man-days required to do the work.



During the year 1947-48 the National Park Service in Virginia and 1948-49 in North Carolina. There remains a very small portion of the State of the 1947-48 season which was available for the National Park Service. This material is placed in the National Park Service for the year 1947-48 to June 30, 1948.

# Work Schedule for 1948

It is not believed that any other work as a separate project will be required of the Park Service during the calendar year 1948. During the year the ranger staff should continue to study locations where the National Park Service has been previously designated and where such studies are found. This work should be completed on their regular duties and should be carried on in the early spring of the year. The wild ribes-bearing areas at Irish Gap and Tyner River Gap should be examined by the ranger staff or representatives of the Bureau if time permits. This also should be incidental to their other duties. An examination should be made of the proposed right-of-way whether paved or not on these portions of the Parkway where this may be present between Irish Gap and the Peaks of Otter. The route of the Parkway through this area is fairly well established but little is known regarding the white pine on some parts of it. Since several years ago since before all the grading is completed, it is possible that some damage from insect pest could occur in the meantime. This examination should be made by one person representing the National Park Service, one from the ranger staff of the Parkway, and one from the Bureau of Entomology and Plant Quarantine. Consideration should be given to a similar examination of the other proposed portions of the Parkway, particularly between Otter Rock and Grandfather Mountain and northward of Route U. S. 57. These proposed portions should be of U. S. 57 and also be considered, but the problem is more pressing at this time. The entire blight problem on the Parkway should be reviewed critically during the year to determine what will be necessary to maintain adequate control after 1948. The landscape architects of the Parkway are well aware of the blight problem and are making plans for development plans accordingly. This should be continued in the future as the National Park Service.

## GREAT SMOKY MOUNTAINS NATIONAL PARK

### Status of Control

Blister rust control work is progressing favorably and according to schedule in the Great Smoky Mountains National Park. Table III, page 53, shows the status of control as of December 31, 1947.

The white pine and control acreage as shown in Table III represent only that part of the Park resurveyed to date. This could be changed by the acquisition of land, the normal reproduction of white pine, or such other items as fire, insect, or disease. Due to the effective protection work by the Park Service on the last three items it is not likely that the white pine acreage will become less. While the table indicates that practically all of the present control acreage is on maintenance it should be remembered that this can change and that a considerable amount of work will be required under a maintenance program on an area of 105,100 acres.

No blister rust has been found in the Park to date. The nearest it has been previously reported was on ribes at Gillispie Gap, which is some 50 miles northeast of the Park. During 1947 blister rust was found on white pine at this same location, which indicates definitely that the disease is moving southwestward in the general direction of the Park. Otherwise, the rust situation remains much the same as described in the 1946 annual report.

### Blister Rust Control Work in 1947

During the year the survey work was confined mostly to Blount County, Tennessee. A re-estimate was made of the pine acreage in this county which resulted in an increase of some 10,000 acres of white pine. Representative tracts in this county were resurveyed and the results compared with the original survey were used as a basis of re-estimating the pine acreage. In addition a detailed survey was made along the upper limits of white pine from Crib Cap to Deal's Gap. This resulted in definitely establishing the upper limits of the white pine in any appreciable quantities. The survey was made of these upper limits and in addition a zone varying from approximately one-fourth to one mile about the white pine. No wild ribes were found within the white pine belt nor within 900 feet of it. The bushes, however, were found at two new locations, one of which was considerably lower and farther south than any previous known. This location consisted of a "pocket" of wild ribes covering some 50 to 100 acres in the headwaters of Panther Creek, northeast of Gregory Bald. This is some 10 miles farther southwest than ribes have previously been reported in the Park. The other location of wild ribes was on a ridge extending westward from Thunderhead Mountain. The elevations of these ribes locations were approximately 4500 feet for Panther Creek northeast of Gregory Bald and 5000 feet for the one on Spence Knob near Thunderhead.



Additional survey was carried on in Sevier County, Tennessee and likewise included the upper limits of white pine in the drainage area of Little River, and also some in the Sugarland District.

During the year the resurvey covered 9,350 acres with white pine found on 3,237 acres. Four hundred and fifty man-days were required to do the work. All of the survey was on a 5% basis. In addition 85 acres were post checked.

During the year ribes eradication work was conducted on 388 acres of ribes-bearing land, and 267 acres of formerly ribes-bearing ground was found not in need of ribes eradication. A total of 2,351 ribes were destroyed and 220 man-days were required to do the work. All of the ribes were wild bushes except 493 which were formerly cultivated bushes found at abandoned homesites. All wild ribes which were eradicated were in the drainage of Cataloochee Creek. The homesites were examined and cultivated ribes were destroyed where found in the drainage of Abrams Creek, Deep Creek, and Cataloochee Creek.

#### Costs

There was expended a total of approximately \$10,416.06 during the calendar year. There remains a balance of about \$5,032.58 available for the period of January 1 to June 30, 1948. The expenditures during 1947 include the purchase of a 1/2 ton pickup truck and a considerable amount of camp equipment. The costs per man-day are the highest in the experience of the Park due to the high wage rates. However, the work performed per man-day compares fairly well with other work in the Region, especially when the fact is considered that all of this survey work was on a 5% basis and that most of it was performed under difficult field conditions. All efforts should be made, however, to increase the coverage per man-day on survey.

#### Work Schedule for 1948

In 1948 it is planned to complete the resurvey of white pine in Sevier County, Tennessee. It is also hoped to begin and possibly complete the resurvey of white pine in Swain County, North Carolina. Some white pine is known to be present on a large tract of land north of Fontana Dam which is now owned by the Tennessee Valley Authority and is expected to become a part of the Park in the near future. It would be desirable if the resurvey and necessary ribes eradication work could be performed on this land during 1948, regardless of whether or not the title of the land has been transferred to the Park. It is planned to examine the homes and homesites on the drainage area of Little River and the west prong of Pigeon River and to destroy any cultivated ribes found. A reexamination will be made of a location at which cultivated ribes were previously

destroyed on the drainages of Abrams Creek, Deep Creek and Cataloochee Creek. Some post checking and possibly wild ribes eradication work will be required in the Cataloochee section. Thorough scouting for the rust on pines should be made over as much of the Park as time will permit during the fall of 1948. Additional information should be secured as conditions permit regarding the distribution of wild ribes and scattered white pine, particularly where the two are growing in association.

Considerable scouting for white pine and wild ribes should be performed in what is now regarded as non-pine areas. This especially is true of the drainages of Big Creek, Cosby Creek and Little Pigeon River where wild ribes are known to be present at relatively low elevations and white pine is coming in some areas.

During the year the field work was under the direct supervision of Mr. Roy Whaley, with technical direction being furnished by Ranger H.O. Edwards, with Mr. Wilbur Savage, Assistant Regional Forester and representatives of the Bureau of Entomology and Plant Quarantine assisting.



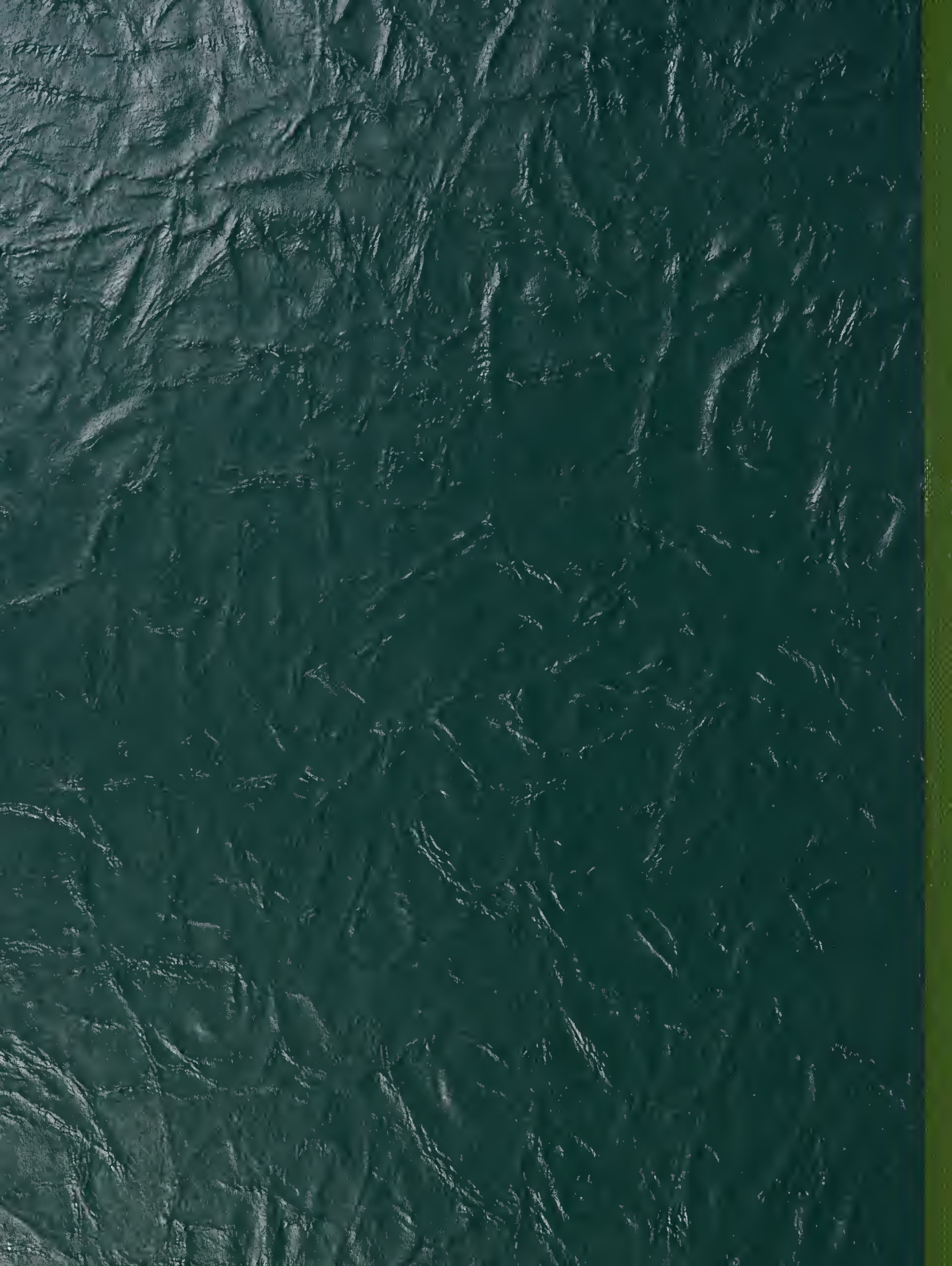














Report of  
WHITE PINE BLISTER RUST CONTROL  
NORTH CENTRAL REGION, 1947

by

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and

J. K. Kroeber  
Pathologist





# BLISTER RUST CONTROL, NORTH CENTRAL REGION, 1947

## Table of Contents

	<u>Pages</u>
General Summary . . . . .	1- 8
Region . . . . .	1
Illinois . . . . .	2
Indiana . . . . .	3
Iowa . . . . .	4
Michigan . . . . .	5
Minnesota . . . . .	6
Ohio . . . . .	7
Wisconsin . . . . .	8
Chart, Location of Blister Rust Control Offices, 1947. . . . .	Following
Organization Chart, 1947 . . . . .	Following
Detailed Narrative Report, 1947, Foreword . . . . .	9
BLR-1-3, Leadership, Coordination and Technical Direction of White Pine Blister Rust Control, North Central Region. . . . .	9-39
Organization . . . . .	9-15
Permanent Organization. . . . .	9-10
Labor Conditions. . . . .	10-11
Man-months Employment . . . . .	11
Automotive Equipment. . . . .	11-12
Automobile Accidents. . . . .	12-13
Compensation Cases. . . . .	13-14
Camp Construction, Maintenance and Warehousing. . . . .	14
Office Equipment. . . . .	15
Authorization and Sources of Funds . . . . .	15
Spread of Rust . . . . .	15-16
Chart, Status of Blister Rust Infection, 1947. . . . .	Following
Illinois. . . . .	16-17
Indiana . . . . .	17
Iowa. . . . .	17
Ohio. . . . .	17-18
Michigan. . . . .	18
Minnesota . . . . .	18
Wisconsin . . . . .	18
White Pine . . . . .	18-20
Values. . . . .	18-19
Surveys . . . . .	19
Ownership of White Pine . . . . .	19
Checking. . . . .	19-20
Local Control Accomplishment . . . . .	20-24
Local Control in 1947 . . . . .	20-21
Improvement in Local Control Procedure. . . . .	21-22
Status of Control . . . . .	22-23
Cumulative Local Control. . . . .	23-24

# Table of Contents (Cont'd)

Pages

Chart 1. Status of Control by States . . . . .	Following	24
Chart 2. Status of Control by Ownership. . . . .	Following	24
Chart 3. Ribes per Acre by States and Ownership. . . . .	Following	24
Nursery Sanitation . . . . .		24-25
Work Done, 1947 . . . . .		24
Present Status of Nursery Sanitation. . . . .		25
Control Area Permits . . . . .		25
Violations of Federal Quarantine 63 . . . . .		25
Cultivated Black Currant Elimination . . . . .		26
Control Pruning . . . . .		26
Informational Activities . . . . .		26
Investigational Work . . . . .		27-38
Experimental Chemical Eradication of Ribes. . . . .		27-38
Text Table 1. Results of Concentration and Dosage Tests Made on <u>Ribes americanum</u> . . . . .		29
Text Table 2. Results of Concentration and Dosage Tests Made on <u>Ribes missouriense</u> . . . . .		30
Text Table 3. Results of Concentration and Dosage Tests Made on <u>Ribes hirtellus</u> . . . . .		31
Text Table 4. Treatments of <u>Ribes americanum</u> by various Chemical Combinations . . . . .		32
Index . . . . .		39
Cooperative Blister Rust Control on State and Private Lands.		
1947, Work Project BLR-3-3 . . . . .		40-51
Objective of Cooperative Project . . . . .		40
Cooperative Expenditures in 1947 . . . . .		40
Control Accomplishments, 1947. . . . .		40-41
Effect of Reduction in Funds on Cooperative Program . . . . .		41
Status of Control. . . . .		42
Text Table 5. Summary of Local Control on State and Private Lands, 1947, Bureau-State Funds, BLR-3. . . . .		43-46
Text Table 5A. Summary of Local Control Performed on 3103 Intermingled Lands Funds, 1947. . . . .		47
Text Table 6. Cumulative Summary of Local Control on State and Private Lands, 1942-1947, Bureau-State Funds, BLR-3 . . . . .		48-51
Text Table 7. Status of Control on Non-Federal Public and Private Lands, December 31, 1947. . . . .		52-53
Text Table 8. Costs of Cooperative Control Program, BLR-3, North Central Region, 1941 to 1947. . . . .		54
Chart 4. Status of Control, State and Private Lands . . . . .	Following	54
Blister Rust Control on National Forests, North Central Region,		
1947, Project BLR-4. . . . .		55-76
Purpose . . . . .		55
Objective. . . . .		55
Memorandum of Understanding. . . . .		55
Protective Zone Widths . . . . .		55-56



# Table of Contents (Cont'd)

Pages

Rust Conditions. . . . .	56
General Status for 1947 . . . . .	56
Significance. . . . .	56
General Status of Control. . . . .	56-57
Ribes Abundance by Forests . . . . .	57
Status of Control by Forests . . . . .	58-68
Manistee National Forest. . . . .	58
Huron National Forest . . . . .	58
Marquette National Forest . . . . .	59
Hiawatha National Forest. . . . .	59
Ottawa National Forest. . . . .	59-60
Nicolet National Forest . . . . .	60-62
Chequamegon National Forest . . . . .	62
Superior National Forest. . . . .	62-63
Chippewa National Forest. . . . .	64
Wayne National Forest . . . . .	65
Hoosier National Forest . . . . .	65
Expenditures . . . . .	65
Recommendations for 1948 . . . . .	65-66
Text Table 9. Local Control on National Forest Lands, by National Forest and Operating Agency, 1947. . . . .	67-70
Text Table 10. Results of Checking After Ribes Eradication on National Forests, 1947. . . . .	71
Text Table 11. Status of Control on National Forests, December 31, 1947 . . . . .	72
Text Table 12. Summary of Local Control Performed on National Forests, to December 31, 1947 . . . . .	72-74
Text Table 13. Summary of Ribes Eradication, All Workings, by National Forests and Operating Agencies, to December 31, 1947 . . . . .	75
Text Table 14. Forest Service (3104) Funds Spent on Blister Rust Control, 1947. . . . .	76
Chart 5. Status of Control by National Forests, December 31, 1947. . . . .	Following 76
Chart 6. Ribes per Acre by National Forests . . . . .	Following 76
 Blister Rust Control on Indian Reservations, 1947, North Central Region, Project BLR-7. . . . .	77-84
Objective . . . . .	77
Memorandum of Understanding. . . . .	77
Protective Zone Widths . . . . .	77-78
Rust Conditions. . . . .	78
General Status for 1947 . . . . .	78
Significance. . . . .	78
Control Accomplishment in 1947 . . . . .	78-79
Checking . . . . .	79
General Status of Control. . . . .	79-80
Status of Control by Reservations. . . . .	80-84
Sac-Fox Reservation . . . . .	80

Table of Contents (Cont'd)

Pages

Grand Portage Reservation . . . . .	80
Hutt Lake Reservation . . . . .	81
Vermilion Reservation . . . . .	81
White Earth Reservation . . . . .	81
Loech Lake (Onigum Unit) Reservation. . . . .	82
Red Lake Reservation. . . . .	82-83
Bad River Reservation . . . . .	83
Lac Court Oreilles Reservation. . . . .	83-84
Lac du Flambeau Reservation . . . . .	84-85
Menominee Reservation . . . . .	85-86
Expenditures . . . . .	86
Accommodations for 1948 . . . . .	86-87
Text Table 15. Local Control on Indian Reservations, 1947 . . . . .	88-89
Text Table 16. Results of Checking on Indian Reservations, 1947 . . . . .	90
Text Table 17. Status of Control on Indian Reservations, December 31, 1947 . . . . .	91
Text Table 18. Summary of Local Control by Reservations to December 31, 1947 . . . . .	92-93
Text Table 19. Indian Service Funds Spent on Blister Rust Control, 1947 . . . . .	94
Chart 7. Status of Control by Indian Reservations, December 31, 1947 . . . . .	Following 94
Chart 8. Ribes per Acre by Indian Reservations. . . . .	Following 94

General Tables

Table

- 1 - Surveys Performed in North Central Region, 1947
- 2 - Summary of Local Control by States and Operating Agencies, North Central Region, 1947
- 3 - Summary of Local Control by States and Ownership Classes, North Central Region, 1947
- 4 - Summary of Local Control by Ownership Classes and Operating Agencies, North Central Region, 1947
- 5 - Results of Checking After Ribes Eradication, by States and Ownership Classes, North Central Region, 1947
- 6 - Control Area Permits, North Central Region, 1947
- 6 & 7 - Status of Control by States and Ownership Classes, North Central Region, December 31, 1947
- 8 - Summary of Local Control by States, Workings, and Ownership Classes, From Inception to December 31, 1947, North Central Region, Gross Acres
- 8 & 9 - Summary of Ribes Eradication, All Workings, by States, Ownership Classes, and Operating Agencies, 1917 to 1947, North Central Region, Gross Acres
- 9 - Summary of Nursery Sanitation, North Central Region, 1947
- 10 - Cultivated Black Currant Elimination, North Central Region, 1947
- 11 - Cumulative Cultivated Black Currant Elimination, North Central Region, to December 31, 1947



Table of Contents (Cont'd)

General Tables (Cont'd)

Table

- 12 - Federal Expenditures for All Blister Rust Control Projects, Milwaukee Office, Calendar Year 1947
- 12A - North Central Region Expenditures, by State and Appropriation, Calendar Year 1947
- 12B - Total North Central Region Expenditures, Classified by State and Activity, Calendar Year 1947
- 12C - North Central Region Expenditures Classified by Appropriation and Activity, 1947
- 13 - Approximate Number of Persons Employed by Months and Agencies, North Central Region, 1947
- 14 - Current and Cumulative Summary of Canker Pruning, to December 31, 1947, North Central Region

Omnibus Tables

Omnibus Table No.

- 1 - (Sheet 1) Summary of Ribes Eradication by States and Operating Agencies, 1947
- 1 - (Sheet 2) Summary of Ribes Eradication by States and Operating Agencies, 1947
- 1 - (Sheet 3) Summary of Ribes Eradication by Forest Service, 1947
- 1 - (Sheet 4) Summary of Ribes Eradication by Forest Service, 1947
- 1 - (Sheet 7) Summary of Ribes Eradication by Indian Service, 1947
- 1 - (Sheet 8) Summary of Ribes Eradication by Indian Service, 1947
- 2 - (Sheet 1) Acreage Worked on National Forest Lands, 1947
- 2 - (Sheet 3) Acreage Worked on Indian Lands, 1947
- 2 - (Sheet 4) Acreage Worked on State and Private Lands, 1947
- 2 - (Sheet 5) Acreage Worked by Land Ownership, 1947
- 2 - (Sheet 6) Acreage Worked on Intermingled Lands, 1947
- 3 - Summary of Field Work Other Than Ribes Eradication, by States and Operating Agencies, 1947
- A - Status of Ribes Eradication by States, All Ownerships, December 31, 1947
- B - (Sheet 1) Status of Ribes Eradication on National Forest Lands, December 31, 1947
- B - (Sheet 2) Status of Ribes Eradication on National Park Lands, December 31, 1947
- B - (Sheet 3) Status of Ribes Eradication on Indian Lands, December 31, 1947
- B - (Sheet 4) Status of Ribes Eradication on State and Private Lands, December 31, 1947
- B - (Sheet 5) Summary of Status of Ribes Eradication by Land Ownership, December 31, 1947
- B - (Sheet 6) Status of Ribes Eradication on Intermingled Lands, December 31, 1947
- C - (Sheet 1) Summary of Ribes Eradication by States and Operating Agencies, 1918-1947

Table of Contents (Cont'd)

Omnibus Tables (Cont'd)

Omnibus Table No.

- C - (Sheet 2) Summary of Ribes Eradication by States and Operating Agencies,  
1918 - 1947
- C - (Sheet 3) Cumulative Summary of Ribes Eradication by Forest Service,  
1918 - 1947
- C - (Sheet 5) Cumulative Summary of Ribes Eradication by Indian Service,  
1918 - 1947
- D - (Sheet 1) Cumulative Summary of Gross Acreage Worked by Land Ownerships,  
1918 - 1947, National Forests
- D - (Sheet 2) Cumulative Summary of Gross Acreage Worked by Land Ownerships,  
1918 - 1947, National Parks
- D - (Sheet 3) Cumulative Summary of Gross Acreage Worked by Land Ownerships,  
1918 - 1947, Indian Lands
- D - (Sheet 4) Cumulative Summary of Gross Acreage Worked by Land Ownership,  
1918 - 1947
- D - (Sheet 5) Acreage Worked by Land Ownership, 1947
- E - Summary of All Work Except Ribes Eradication by States and Operating  
Agencies, 1918 - 1947
- G - Summary of All Ribes Eradication by States, Operating Agencies and  
Programs, 1918 - 1947



# Summary of White Pine Blister Rust Control - December 31, 1947

## NORTH CENTRAL REGION

White Pine Being Protected: Natural: 968,970 Acres; Planted: 166,723 Acres;  
Total: 1,135,693 Acres. Estimated Value: \$120,000,000.

Item	Status of Control (Net Acres)				Total (Acres)	Per- cent
	Forest Service (Acres)	Indian Service (Acres)	Nat.Park Service (Acres)	State and Private (Acres)		
W. P. in Control Area	181,988	61,824	15	891,866	1,135,693	-
Total Control Area	380,955	110,024	120	3,471,595	3,962,694	100.0
Worked Initially	271,598	100,169	120	2,523,420	2,895,307	73.1
Worked Twice	123,744	57,282	-	805,786	986,812	24.9
Worked More Than Twice	27,667	19,053	-	119,264	165,984	4.2
On Maintenance	139,931	44,915	-	835,871	1,020,717	25.8
Needing Initial Work	109,357	9,855	-	948,175	1,067,387	26.9
Needing Rework	131,667	55,254	120	1,687,549	1,874,590	47.3

Local Control, All Agencies (Gross Acres)						
Working	Acres	Acres Worked	Ribes Destroyed	Man- Days Used	Per Acre	
	White Pine Protected				Ribes	Man- Days
Calendar Year 1947						
Initial	29,306	88,635	1,742,570	10,127	19.7	0.11
Second	21,843	59,647	996,408	8,739	16.7	0.15
Third and Other	16,163	30,919	1,009,299	8,901	32.6	0.29
Total, 1947	67,312	179,201	3,748,277	27,767	26.9	0.15
Cumulative, 1917 - 1947 (Gross Acres)						
Initial	1,012,518	3,304,919	221,897,573	872,365	67.1	0.26
Second	361,562	986,812	26,494,518	186,431	26.8	0.19
Third and Other	66,262	165,984	4,074,783	34,785	24.5	0.22
Total, Cumulative	1,440,342	4,457,715	252,466,874	1,093,581	58.5	0.25

Blister Rust Infection: Now found on pine and ribes in all seven States; on pine in 177 counties; on ribes in 390 counties of the 622 counties in the Region. Most severe in northern part of Region.

Nursery Sanitation: Five nurseries worked in 1947. Ribes-free zones being maintained around 43 nurseries.

Canker Pruning, 1947: 5,420 cankers removed from 6,144 trees (including silvicultural pruning). 254 infected pines removed. Cumulative: 153,514 cankers removed from 67,694 infected trees; 2,307 infected trees removed.

Surveying and Checking, 1947: 75,134 acres of control area initially surveyed; 104,886 acres resurveyed, and 34,058 acres retained; 309,552 acres post-checked and 233,887 acres retained; 145,901 acres given regular check.

Cultivated Black Currant Elimination: None in 1947 except a few bushes removed in local control. Cumulative: 35,770 plantings with 295,298 bushes found; 34,774 plantings with 288,642 bushes destroyed.

Control Area Permits, 1947: 797 applications received in four states; 642 approved; 81 rejected; 74 voluntarily cancelled.



# Summary of White Pine Blister Rust Control - December 31, 1947

## ILLINOIS

White Pine Being Protected: Natural: 231 Acres; Planted: 1,692 Acres;  
Total: 1,923 Acres. Estimated value: \$2,500,000

### Status of Control (Net Acres)

Item	State and Private (Acres)	Percent
White Pine in Control Area	1,923	-
Total Control Area	13,386	100.0
Worked Initially	11,157	83.3
Worked Twice	10,183	76.1
Worked More Than Twice	12,622	94.3
On Maintenance	2,337	17.5
Needing Initial Work	2,229	16.7
Needing Rework	8,820	65.9

### Local Control, All Agencies (Gross Acres)

Working	Acres		Man-		Per Acre	
	White Pine Protected	Acres Worked	Ribes Destroyed	Days Used	Ribes	Man- Days
<u>Calendar Year 1947</u>						
Initial	28	202	12,975	54	64.4	0.27
Third and Other	8	30	1,347	2	44.9	0.06
Total, 1947	36	232	14,322	56	61.7	0.24
<u>Cumulative, 1932-1947 (Gross Acres)</u>						
Initial	3,312	19,922	1,499,380	3,870	75.3	0.19
Second	2,285	10,183	610,042	2,512	59.9	0.25
Third and Other	2,756	12,622	533,996	3,509	42.3	0.27
Total, Cumulative	8,353	42,727	2,643,418	9,891	61.9	0.23

Blister Rust Infection: Found on pine in six counties; on ribes in 24 counties out of 102 counties.

Nursery Sanitation: None worked in 1947. Ribes-free zones being maintained in five nurseries.

Surveying and Checking, 1947: 70 acres control area initially surveyed; 10,056 acres resurveyed and 1,277 acres retained; 3,088 acres post-checked and 379 acres retained; 182 acres given a regular check.

Cultivated Black Currant Elimination: None in 1947. Cumulative: 532 plantings with 4,171 bushes found; 60 plantings with 761 bushes destroyed.



Summary of White Pine Blister Rust Control - December 31, 1947

INITIAL

White Pine Being Protected: Natural: 327 acres; Planted: 8,240 acres;  
Total: 8,567 acres. Estimated value: \$2,500,000

Item	Status of Control (Net Acres)			Percent
	Forest Service (Acres)	State and Private (Acres)	Total (Acres)	
W. P. in Control Area	18	8,549	8,567	-
Total Control Area	179	183,417	183,596	100.0
Worked Initially	179	77,429	77,608	42.2
Worked Twice	-	19,032	19,032	10.2
Worked More Than Twice	-	5,845	5,845	3.1
On Maintenance	179	51,876	51,855	27.5
Needling Initial Work	-	110,968	110,968	59.8
Needling Rework	-	25,753	25,753	13.7

Working	Local Control, All Agencies (Gross Acres)				Per Acre	
	White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Ribes	Man-Days
Calendar Year 1947						
Initial	486	5,923	29,366	100	7.6	0.33
Second	314	2,888	28,455	112	9.8	0.04
Third and Other	166	870	6,784	50	7.8	0.06
Total, 1947	966	9,681	64,605	262	8.2	0.43
Cumulative, 1935 - 1947 (Gross Acres)						
Initial	8,677	87,422	426,534	5,903	5.0	0.24
Second	3,324	19,032	92,179	1,035	4.8	0.05
Third and Other	833	5,845	24,741	262	4.2	0.26
Total, Cumulative	12,764	112,375	543,454	7,200	1.9	0.05

Blister Rust Infection: Found on natural pine for first time in two counties in 1947 (Elkhart and La Grange). Rust on ribes found in 39 additional counties in 1947 making a total of 53 out of 92 counties in the State.

Nursery Sanitation: None worked in 1947. Ribes-free zones being maintained around the nurseries.

Canker Pruning, 1947: Four cankers removed from two trees; Cumulative, same.

Surveying and Checking, 1947: 2,545 acres control area initially surveyed; 5,805 acres resurveyed and 1,377 retained; 9,594 acres post-checked, and 4,629 acres retained; 2,155 acres given regular check.

Cultivated Black Current Elimination: None in 1947. Cumulative: 5 plantings with 20 bushes found; 3 plantings with 15 bushes destroyed.



# Summary of White Pine Blister Rust Control - December 31, 1947

## IOWA

White Pine Being Protected: Natural: 712 acres; Planted: 5,133 acres;  
Total: 5,845 acres. Estimated value: \$11,000,000 - chiefly as  
shelterbolts.

### Status of Control (Net Acres)

Item	Indian	State and	Total	Percent
	Service (Acres)	Private (Acres)		
P. P. in Control Area	45	5,800	5,845	-
Total Control Area	500	49,501	50,001	100.0
Worked Initially	500	33,553	34,053	68.1
Worked Twice	206	6,833	7,039	14.1
Worked More Than Twice	-	1,208	1,208	2.4
On Maintenance	-	18,798	18,798	37.6
Needling Initial Work	-	15,948	15,948	31.9
Needling Rework	500	14,755	15,255	30.5

### Local Control, All Agencies (Gross Acres)

Working	Acres	Acres Worked	Ribes Destroyed	Man- Days Used	Per Acre	
	White Pine Protected				Ribes	Man- Days
	Calendar Year 1947					
Initial	50	323	56,472	523	174.8	1.62
Second	69	587	93,330	635	158.9	1.00
Third and Other	23	133	8,084	184	60.8	1.38
Total, 1947	142	1,043	157,886	1,342	151.4	1.28
Cumulative, 1933 - 1947 (Gross Acres)						
Initial	3,368	38,724	3,528,535	27,014	91.1	0.69
Second	987	7,039	641,412	4,990	91.1	0.71
Third and Other	291	1,208	110,087	1,068	91.1	0.88
Total, Cumulative	4,646	46,971	4,280,034	33,072	91.1	0.70

Blister Rust Infection: On pine in 9 counties; on ribes in 56 counties of the  
99 counties in the State.

Nursery Sanitation: None performed in 1947. Ribes-free zones being maintained  
around 7 nurseries.

Canker Pruning, 1947: 481 cankers removed from 202 trees; 219 infected trees  
removed. Cumulative: 1,615 cankers removed from 493 trees; 619 infected  
trees removed.

Surveying and Checking, 1947: No survey. 1,043 acres given regular check in  
1947.

Cultivated Black Currant Elimination: No special project in 1947 but 3 plantings  
with 16 bushes were destroyed. Cumulative: 1,606 plantings with 7,274  
bushes found; 1,587 plantings with 7,204 bushes destroyed.



Summary of White Pine Blister Rust Control - December 31, 1947

MICHIGAN

White Pine Being Protected: Natural: 324,982 acres; Planted: 77,778 acres;  
Total: 402,760 acres. Estimated value: \$33,000,000.

Item	Status of Control (Net Acres)				Percent
	Forest Service (Acres)	Nat. Park Service (Acres)	State and Private (Acres)	Total (Acres)	
W. P. in Control Area	57,019	15	345,726	402,760	-
Total Control Area	152,992	120	1,057,913	1,211,025	100.0
Worked Initially	147,777	120	930,411	1,078,308	89.0
Worked Twice	57,849	-	350,855	408,704	33.7
Worked More Than Twice	13,811	-	60,246	74,057	6.1
On Maintenance	97,435	-	302,209	399,644	33.0
Needing Initial Work	5,215	-	127,502	132,717	11.0
Needing Rework	50,342	120	628,202	678,664	56.1

Working	Local Control All Agencies (Gross Acres)					
	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre Ribes	Man-Days
Calendar Year 1947						
Initial	5,014	13,608	235,726	1,540	20.1	0.11
Second	9,730	27,293	217,615	1,713	7.3	0.06
Third	4,578	12,414	103,720	1,077	8.4	0.09
Total, 1947	19,322	53,315	557,061	4,330	11.4	0.08
Cumulative, 1928 - 1947 (Gross Acres)						
Initial	430,921	1,306,857	65,248,446	278,932	49.9	0.21
Second	150,233	408,704	8,084,433	53,930	19.3	0.13
Third	27,935	74,057	1,030,428	9,234	13.9	0.12
Total Cumulative	609,089	1,789,618	74,363,307	342,096	41.5	0.19

Blister Rust Infection: On pine in 52 counties; on ribes in all of the 83 counties. Severe in Upper Michigan.

Nursery Sanitation: One nursery worked in 1947. Ribes-free zones maintained around 7 of the 13 nurseries originally worked.

Canker Pruning, 1947: None in 1947. Cumulative work: 101,468 cankers removed from 41,476 trees out of 776,565 trees examined; 291 infected trees removed.

Surveying and Checking, 1947: 15,410 acres control initially surveyed; 34,969 acres resurveyed and 10,410 acres retained; 176,157 acres post-checked and 129,881 acres retained; 53,315 acres given regular check.

Cultivated Black Currant Elimination: None in 1947. Cumulative: 14,927 plantings with 147,839 bushes found; 14,860 plantings with 147,185 bushes destroyed. Program completed except for recheck.

Control Area Permits, 1947: 237 requests received; 193 granted; 10 rejected; 34 voluntarily withdrawn.



# Summary of White Pine Blister Rust Control - December 31, 1947

## MINNESOTA

White Pine Being Protected: Natural: 245,158 acres; Planted: 21,395 acres;  
Total: 266,553 acres. Estimated value: \$25,000,000.

### Status of Control (Net Acres)

Item	Forest Service (Acres)	Indian Service (Acres)	State and Private (Acres)	Total (Acres)	Percent
W. P. in Control Area	95,377	21,690	149,486	266,553	-
Total Control Area	157,914	32,665	400,287	590,866	100.0
Worked Initially	57,269	32,622	283,329	373,220	63.2
Worked Twice	25,103	22,470	66,623	114,201	19.3
Worked More Than Twice	10,077	11,426	6,225	27,728	4.7
On Maintenance	17,453	17,557	59,472	94,482	16.0
Needing Initial Work	100,645	43	116,958	217,646	36.8
Needing Rework	39,816	15,065	223,857	278,738	47.2

### Local Control All Agencies (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man- Days Used	Per Acre Ribes	Man- Days
		<u>Calendar Year 1947</u>				
Initial	2,668	3,674	606,600	3,508	165.1	0.95
Second	3,631	5,386	185,224	1,279	34.4	0.24
Other	7,367	9,937	423,435	4,038	42.6	0.41
Total, 1947	13,666	18,997	1,215,259	8,825	64.0	0.46
		<u>Cumulative, 1917 - 1947 (Gross Acres)</u>				
Initial	172,371	417,951	61,629,693	163,388	147.5	0.39
Second	58,906	114,201	7,606,094	40,180	66.6	0.35
Other	18,318	27,728	1,312,887	10,447	47.3	0.38
Total, Cumulative	249,595	559,880	70,548,674	214,015	126.0	0.38

Blister Rust Infection: On pine in 35 counties; on ribes in 38 counties.  
Severe in northeastern Minnesota.

Nursery Sanitation: No nurseries were worked in 1947. Ribes-free zones being maintained around 8 nurseries.

Canker Pruning, 1947: 5,939 trees treated (including silvicultural pruning), 35 trees removed, 4,934 cankers removed. Cumulative: 25,679 trees treated, 1,384 trees removed, 50,301 cankers removed.

Surveying and Checking, 1947: Pre-eradication survey on 2,849 acres of control area, resurveyed 35,548 acres retaining 11,061 acres; post-checked 11,444 acres and retained 11,444 acres. 10,747 acres were formally checked of the 18,997 acres that were worked in 1947.

Cultivated Black Currant Elimination: None in 1947 though one location with 3 bushes was destroyed. Cumulative: Found and destroyed 3,261 locations containing 23,309 bushes.

Control Area Permits, 1947: 186 applications received, 173 permits granted, 3 rejected, and 10 voluntarily withdrawn.



# Summary of White Pine Blister Rust Control - December 31, 1947

## OHIO

White Pine Being Protected: Natural: 3,084 acres; Planted: 17,147 acres;  
Total: 20,231 acres. Estimated value: \$6,000,000.

### Status of Control (Net Acres)

Item	Forest Service (Acres)	State and Private (Acres)	Total (Acres)	Percent
W. P. in Control Area	520	19,711	20,231	-
Total Control Area	4,341	466,358	470,699	100.0
Worked Initially	4,029	179,941	183,970	39.1
Worked Twice	-	43,311	43,311	9.2
Worked More Than Twice	-	14,123	14,123	3.0
On Maintenance	4,029	72,871	76,900	16.3
Needing Initial Work	312	286,417	286,729	60.9
Needing Rework	-	107,070	107,070	22.7

### Local Control All Agencies (Gross Acres)

Working	Acres	Acres		Man-Days Used	Per Acre	
	White Pine Protected	Acres Worked	Ribes Destroyed		Ribes	Man-Days
		Calendar Year 1947				
Initial	697	5,648	21,252	256	3.8	0.05
Second	664	5,398	38,915	495	7.2	0.09
Third and Other	92	789	8,695	98	11.0	0.13
Total, 1947	1,453	11,835	68,862	849	5.8	0.07
	Cumulative, 1933 - 1947 (Gross Acres)					
Initial	15,485	204,334	2,541,454	32,824	12.4	0.16
Second	4,920	43,311	719,689	12,311	16.6	0.28
Third and Other	2,955	14,123	169,930	2,413	12.0	0.17
Total, Cumulative	23,360	261,768	3,431,073	47,548	15.1	0.18

Blister Rust Infection: Found on pines in 10 counties; on ribes in 65 counties out of 88 counties in State.

Nursery Sanitation: Three nurseries were worked in 1947 which represents all the nurseries growing white pine in the State at this time.

Canker Pruning, 1947: One canker removed from one tree. Cumulative: 44 trees treated, 13 trees removed, 126 cankers removed.

Surveying and Checking, 1947: Preeradication survey on 1,764 acres of control area, resurveyed 3,836 acres retaining 1,970 acres; post-checked 12,616 acres and retained 7,211 of them. Formal check made on 6,975 acres of the 9,405 worked in 1947.

Cultivated Black Currant Elimination: None in 1947. Cumulative: 8,838 plantings with 75,605 bushes found; 8,406 plantings with 73,117 bushes destroyed. Program completed except for recheck.

Control Area Permits, 1947: 52 applications received; 25 approved; 27 rejected.



# Summary of White Pine Blister Rust Control - December 31, 1947

## WISCONSIN

White Pine Being Protected: Natural: 394,476 acres; Planted: 35,339 acres;  
Total: 429,815 acres. Estimated value: \$40,000,000.

### Status of Control (Net Acres)

Item	Forest Service (Acres)	Indian Service (Acres)	State and Private (Acres)	Total (Acres)	Percent
W. P. in Control Area	29,054	40,089	360,672	429,815	-
Total Control Area	65,529	76,859	1,295,733	1,438,121	100.0
Worked Initially	62,344	67,047	1,007,600	1,136,991	79.1
Worked Twice	40,792	34,606	308,884	384,282	26.7
Worked More Than Twice	3,779	7,627	18,995	30,401	2.1
On Maintenance	20,835	27,358	328,508	376,701	26.2
Needing Initial Work	3,185	9,812	283,133	301,130	20.9
Needing Rework	41,509	39,689	679,092	760,290	52.9

### Local Control All Agencies (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man- Days Used	Per Acre Ribes	Man- Days
<u>Calendar Year 1947</u>						
Initial	20,363	61,257	729,679	4,146	11.9	0.07
Second	7,435	18,095	432,869	4,505	23.9	0.25
Third and Other	3,929	6,746	457,234	3,452	67.8	0.51
Total, 1947	31,727	86,098	1,619,782	12,103	18.8	0.14
<u>Cumulative, 1920 - 1947 (Gross Acres)</u>						
Initial	378,434	1,229,690	87,013,553	362,434	70.8	0.29
Second	140,907	384,282	8,740,669	71,473	22.7	0.19
Third and Other	13,174	30,401	892,714	7,852	29.4	0.26
Total, Cumulative	532,515	1,644,373	96,646,936	441,759	58.8	0.27

Blister Rust Infection: On pine in 63 counties; on ribes in all 71 counties in the State.

Nursery Sanitation: One nursery worked in 1947. Ribes-free zones being maintained around 10 nurseries.

Surveying and Checking, 1947: 52,496 acres of control area initially surveyed; 16,672 acres resurveyed and 7,963 retained; 96,653 acres post-checked and 80,343 acres retained; 71,484 acres given regular check.

Cultivated Black Currant Elimination: None in 1947. Cumulative: 6,601 plantings with 37,080 bushes found; 6,597 plantings with 37,051 bushes removed.

Control Area Permits, 1947: 322 applications received; 251 approved; 41 rejected; 30 voluntarily cancelled.



LOCATION OF BLISTER RUST CONTROL OFFICES  
NORTH CENTRAL REGION  
1947





ORGANIZATION CHART, NORTH CENTRAL REGION, AS OF DECEMBER 31, 1947

Regional Office, Milwaukee, Wisconsin  
Regional Leader, Henry N. Putnam, P-5  
Asst. Regional Leader, John K. Kroeber, P-4  
Admin. Assistant, Charles T. Geiser, CAF-9  
Audit Clerk, William F. Beng, CAF-5  
 3 Clerk-Stenos., CAF-3 to CAF-4

Southern Area  
Columbus, Ohio  
Area Leader  
 Leiton F. Nelson, P-3  
 Clerk-Steno., CAF-3

Illinois  
Belvidere  
Asst. Area Leader  
 F. D. Bergeson (a)

Indiana  
Indianapolis  
Field Supervisor  
 Vacant

Iowa  
Osceola  
Field Supervisor  
 Robert G. Hayes, SP-5

Ohio  
Columbus  
Field Supervisor  
 Robert O. Deerner, SP-6

Michigan  
Lansing  
State Leader  
 Glenn R. Allison, P-3  
 Clerk-Steno., CAF-3

Upper Michigan  
Fscanaba  
District Leader  
 William D. Miller, P-2

Lower Michigan  
Newaygo  
District Leader  
 R. I. Thompson, P-2

Wisconsin  
Madison  
State Leader  
 T. F. Kouba, P-3  
 Clerk-Steno., CAF-3  
 Draftsman (a)

Eastern District  
Antigo  
District Leader  
 Ray Weber, P-2

Western District  
Menominee  
District Leader  
 F. W. Cleasby, P-2

Minnesota  
St. Paul  
State Leader  
 L. B. Ritter, P-3  
 Clerk-Steno. (a)

Eastern District  
Duluth  
District Leader  
 D. H. Stewart, P-2  
 Clerk-Steno. (a)

Western District  
Walker  
District Leader  
 J. N. Licke, P-2

Southern District  
Grand Rapids  
District Leader  
 R. E. Deely, P-2





## Detailed Narrative Report, 1947

### Foreword

As initiated in 1942, the organization of the 1947 Report follows the same pattern. It is divided into four main parts, so arranged that separate will be available covering control work on National Forests and Indian Reservations to these respective agencies. The four divisions are listed below:

(1) BLR-1-3. Leadership, Coordination and Technical Direction. This includes summaries, general narrative section, and tables covering all activities. Local control work is included for completeness.

(2) BLR-3-3. Cooperative Blister Rust Control on State and Privately Owned Lands. This includes tables and a discussion by states of work done and status of control on lands in non-federal public and private ownership.

(3) BLR-4. Blister Rust Control Operations on National Forests. This includes tables and discussions of work done and status of control on each of the 11 white pine growing National Forests in this Region.

(4) BLR-7. Blister Rust Control Operations on Indian Reservations. This includes tables and discussions of work done and status of control on each of the 10 Indian Reservations producing white pine in this Region.

BLR-1-3. Leadership, Coordination and Technical Direction of White

Pine Blister Rust Control, North Central Region

### Organization

#### Permanent Organization

The permanent organization as of December 31, 1947 is shown in the accompanying chart. Several changes in the organization took place, chiefly as a result of reduced funds after July 1. Details of all changes are as follows:

Mr. Charles T. Geiser was transferred from Cereal and Forage Insect Investigations to the Administrative Assistant Position, CAF-9, in the Milwaukee Office on February 11, 1947. Mr. Stanley J. Dorick, who had been detailed from the Barberry Eradication Office, Minneapolis, Minnesota to temporarily fill the position, returned to that office.

Miss Frances M. Kloster, CAF-3, took annual, sick, and leave without pay beginning in February, 1947, and transferred to the Soil Conservation Service in September. Her position was not filled.

Official headquarters for William R. Doell, P-2, District Leader, were changed from St. Paul, Minnesota to Grand Rapids, Minnesota, in July, 1947. Purpose of this change was to locate the District Headquarters closer to the large amount of white pine in the north. Boundaries of the three Districts were adjusted so that the Duluth District included the Superior National Forest, Indian Reservations in St. Louis, Cook and Lake Counties and state and private lands close to Duluth. The Walker District included the Chippewa National Forest, Indian Reservations outside of the Duluth District, and state and private lands close to Walker. The Grand Rapids District included all other state and private lands, and also the management of the Grand Rapids Blister Rust Control Warehouse.

Because of reduction in funds, the following employees were given furloughs without pay:

Mr. Leland W. Stratton, SP-6 at Escanaba, Michigan, stopped active duty on August 31, 1947. He accepted a job with the Meade Paper Company, making maps of their holdings by aid of aerial photographs.

On October 4, 1947, Dr. E. E. Honey, P-2, Milwaukee, Wisconsin, ceased active duty. He is now Assistant Professor of Botany in the University of Wisconsin Extension School at Wausau.

On October 4, 1947, Mr. Elmer L. Wilson, P-2, ceased active duty as Leader in Iowa. He is Instructor in Botany at Iowa State College and is also working on his Master's Degree in Botany there. Mr. Robert G. Hayes, SP-5, is continuing field work in Iowa.

Mr. Donald E. Mackay, SP-5, Field Supervisor in Indiana, resigned, effective C.O.B. November 24 to accept employment in a Veneer Company. His position is not being filled.

Mr. Clayton O. Bruce, SP-4 in Illinois, was transferred to the Soil Conservation Service in January, 1948. His position is not being filled.

Mr. Robert I. Thompson, P-2, District Leader in Lower Michigan, and Donald F. Williams, SP-6 in Minnesota, were loaned to the Forest Service on 1080 procedure for three pay periods on Lower Michigan National Forest and sixteen pay periods on the Superior National Forest, respectively. Thompson's employment by the Forest Service was in the fall, while that of Mr. Williams started in late summer and will extend into 1948.

#### Labor Conditions

As in recent years, most common sources of labor in 1947 were over-age men, teen-age boys and Indian women. Our hourly wage rates were increased to \$0.75 for labor; \$0.90 for crew leader; and \$1.05 for foreman throughout the Region, and \$0.05 higher in each category in camps in Minnesota.

Labor was generally available and turnover was smaller than in 1946. The drastic reduction in 3103 funds beginning July 1, 1947 made it necessary to reduce the number employed from 221 in June to 98 in July, and 18 in August.



In Minnesota, Bureau camp personnel in two camps were transferred to Forest Service blister rust control camps. In other states only the best and most experienced laborers were retained. After July 1 the quality of work and output per man-day was maintained, but the quantity of work done on state and private lands was much less than in corresponding periods in recent years.

### Man-months Employment

There were employed in 1947 approximately 1,861 man-months (Table 13), compared with 2,612 man-months in 1946. The reduction occurred in all of the operating agencies except the Indian Service, but was chiefly in BLR-3 on which 609 man-months were employed in 1947 compared with 1,287 in 1946. The drastic reduction in 3103 funds in the Fiscal Year 1948 was responsible. On Indian Service 3107 funds there were 421 man-months employed in 1947 and 332 in 1946. The peak of employment, 497 man-months, for the Region came in June, 1947. Thereafter it reduced sharply to 357 in July, 238 in August, and 109 in September. In other years, July and August have been peak months of employment.

### Automotive Equipment

The automotive equipment was materially improved by the purchase of 5 new passenger cars, 3 - 1-1/2 ton trucks, and 18 sedan delivery trucks in 1947, and by the selling or disposal of worn-out cars consisting of 1 passenger auto and 8 trucks. This is shown in the accompanying table. At the end of 1947 we had 16 passenger cars and 47 trucks. The years of manufacture were as follows:

1935 . . .	1 passenger car . . .	1 truck
1937 . . .	3 passenger cars. . .	5 trucks
1939 . . .	2 passenger cars. . .	17 trucks
1940 . . .	3 passenger cars. . .	3 trucks
1941 . . .	2 passenger cars. . .	0 trucks
1947 . . .	5 passenger cars. . .	21 trucks
<u>Total. . .</u>		<u>16 passenger cars. . . 47 trucks</u>

### Automobiles on Hand, January 1, Each Year

Type	1942	1943	1944	1945	1946	1947	1948
Passenger Cars	21	18	13	12	13	12	16
Trucks	56	44	37	36	34	34	47
<u>Total</u>	<u>77</u>	<u>62</u>	<u>50</u>	<u>48</u>	<u>47</u>	<u>46</u>	<u>63</u>

Government Autos in Use, 1947, North Central Region

Make	Model	Year	On Hand Jan. 1, 1947	Pur- chased in 1947	Sold or Declared Surplus 1947	On Hand Jan. 1, 1948
<u>Passenger Cars</u>						
Ford 60	Tudor	1937	3	0	1	2
Ford 85	Tudor	1939	1	0	0	1
Chevrolet	Standard Coach	1935	1	0	0	1
Chevrolet	Standard Coach	1939	1	0	0	1
Chevrolet	Standard Coach	1940	2	0	0	2
Chevrolet	Sedan, 4-Door	1940	1	0	0	1
Studebaker	Champion Coach	1941	2	0	0	2
Pontiac 6	Sedan, 4-Door	1937	1	0	0	1
Pontiac	Sedan, 4-Door	1947	0	4	0	4
Plymouth	Sedan, 4-Door	1947	0	1	0	1
Total Passenger Cars			12	5	1	16
<u>Trucks</u>						
Ford	Pick-up	1937	3	0	0	3
Ford	1-1/2 Ton Stake	1947	0	3	0	3
Ford	Sedan Delivery	1940	1	0	0	1
Chevrolet	Sedan Delivery	1947	0	18	0	18
Chevrolet	Sedan Delivery	1937	2	0	0	2
Chevrolet	Sedan Delivery	1939	3	0	2	1
Chevrolet	Pick-up	1940	1	0	0	1
Chevrolet	Sedan Delivery	1940	1	0	0	1
Plymouth	Pick-up	1939	19	0	4	15
Dodge	Pick-up	1935	2	0	1	1
Dodge	1-1/2 Ton	1939	2	0	1	1
Total Trucks			34	21	8	47
Total Automobiles			46	26	9	63

In addition to the above automotive equipment we continued to use the following automobiles owned by the Barberry Eradication Project:

1939 . . . . Chevrolet Panel Truck . . . . 1 in Minnesota  
 1939 . . . . Chevrolet Panel Truck . . . . 1 in Iowa

Automobile Accidents

There were three automobile accidents involving government-owned cars in 1947, none serious, and no one was injured. In 1947, approximately 300,000 miles were driven in 63 government-owned cars. Thus, there was one automobile accident per 100,000 miles of travel. Details of the three minor automobile accidents follow:



1. Chevrolet Truck, 1939 - License A-4751  
Driver - Wilfred M. Montferrand  
Passengers - None  
Place - Grand Rapids, Minnesota  
Date of Accident - March 8, 1947  
Cause - Right front wheel brake would sometimes grab when wet which caused car to skid on icy road and turn over.  
Damage to Government car - Dented fender and body.  
Repairs - About \$15.00 cost made at government expense.  
Damage to Other Car - None involved.  
Injuries - None
  
2. Chevrolet Panel, 1940 - License A-5178  
Driver - David P. Wadsworth  
Passengers - None  
Place - Vassar, Michigan  
Date of Accident - April 5, 1947  
Cause - Private vehicle backed out fast from diagonal parking zone without warning and crashed into right front side of government vehicle.  
Damage to Government Car - Right front fender damaged, right running board damaged, right cowl damaged, right under-hood panel damaged, tie rod bent, right front hub cap damaged.  
Repairs - About \$70.00 - paid by insurance company.  
Damage to Other Car - License bracket and stop light.  
Repairs - No claim made.  
Injuries - None
  
3. Chevrolet Sedan Delivery, 1947 - License A-5170  
Driver - Clayton O. Bruce  
Passengers - None  
Place - State Routes 23 and 176, between Woodstock and Belvidere, Illinois.  
Date of Accident - December 10, 1947  
Cause - Waiting at stop sign on S. Rt. 176 for private vehicle approaching from south. As he approached intersection of two highways, he applied his brakes attempting to make right turn and go east, skidding on snow and icy pavement directly across highway striking government car on left side near front door.  
Damage to Government Car - Left front fender and running board damaged.  
Repairs - Not known. Paid by insurance company.  
Damage to Other Car - Broken head lamp. Left front fender damaged.  
Repairs - No claim made.  
Injuries - None

#### Compensation Cases

During 1947, there were 11 compensation cases processed through the Milwaukee Office, for persons employed on 3101 and 3103 funds. Since there

were approximately 883 man-months of such employment, the accident rate was 12.5 compensation cases per 1,000 man-months, compared with 20.3 in 1946. The classification of compensation cases in 1947 is shown in the following table:

Number of Injury Cases, Processed Through the Milwaukee Office  
1947, by States

State	Eye Injury	Ivy and Other Plant Poisoning	Infection	Cuts, Sprains, Fractures and Bruises	Total
Iowa	-	-	-	1	1
Ohio	-	2	-	-	2
Michigan	1	-	-	-	1
Minnesota	-	-	1	4	5
Wisconsin	1	-	-	1	2
Milwaukee Office	-	-	-	-	-
<b>Total</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>6</b>	<b>11</b>
Lost Time, Days	-	-	5/8's day	19	19-5/8's*

\* - Only 1 day and 5 hours lost covered by earned sick leave.

Camp Construction, Maintenance and Warehousing

Most of the pine areas in northeastern Minnesota are inaccessible, requiring the use of camps to house the men doing eradication work. Tents are not adequate because of the frequent rains which rot them, and make conditions of work so uncomfortable that it is difficult to retain workers. Construction of portable camp buildings, under the direction of W. R. Doell, begun in 1946, was brought to practical completion during 1947. Camp facilities for at least two 60-man camps have been completed, and include the following items:

- 1 - 14' by 48' bunkhouse
- 9 - 16' by 16' bunkhouses
- 1 - 6' by 6' latrine
- 1 - 6' by 12' latrine
- 2 - 12' by 14' washhouses
- 3 - Automobile house trailers
- 20 - Mess tables
- 2 - Dish-up tables
- 2 - Meat boxes
- 8 - Bunkhouse tables
- 16 - Bunkhouse stools
- 2 - Shower stalls
- 2 - 24' boats

In addition there are adequate supplies of stoves for cooking and heating, kitchen utensils, pumps and light plants, cots, bedding, etc. Much of this equipment was obtained without cost except for transportation from other government agencies.



## Office Equipment

By transfer from surplus lists of other agencies we were able to obtain, without exchange of funds, much-needed office equipment, including a practically new liquid process ditto machine, calculating and adding machines, typewriters, desks, chairs, filing and transfer cases, etc.

## Authorization and Sources of Funds

As in the past several years, the work in 1947 was continued under Memoranda of Agreement drawn up between the responsible State Agencies and the Bureau of Entomology and Plant Quarantine. These, with the exception of the new agreement with Iowa, which is shown in the 1945 Regional Report, are shown in the 1936 Regional Annual Report, and are not repeated here.

During 1947, work was performed on funds furnished from the following sources:

### 1. State and Private

- a. Direct aid (Ribes eradication matched by 3103 Federal)
- b. Indirect aid (Other services)

### 2. Federal Blister Rust Appropriation

- a. 3101. Leadership, coordination, and technical direction
- b. 3103. Cooperative blister rust control on State and private lands. (Matched by State direct aid)
- c. 3103. Blister Rust control on lands of intermingled ownership
- d. 3104. Blister rust control on National Forests in Michigan, Minnesota, and Wisconsin
- e. 3107. Blister rust control on Indian Reservations in Minnesota and Wisconsin. (Matched by Tribal funds on the Menominee Indian Reservation)

## Spread of the Rust

The late spring, and the protracted hot, dry periods in August and October made conditions less favorable for intensification of the rust on ribes and for pine infection. However, a large southward extension of ribes infection was found in the Southern Area, especially in Indiana, where ribes infection was reported initially in 1947 from 39 counties. Known spread of rust on ribes and on pines is summarized in the following table:

Counties in Which White Pine or Ribes Infection Has Been Found  
to December 31, 1947 - North Central Region

State	Total Number of Counties	Number of Counties with Infection			
		Found Initially, 1947		Cumulative to 12/31/47	
		On Pines	On Ribes	On Pines	On Ribes
Illinois	102	5	9	6	24
Indiana	92	2	39	3	53
Iowa	99	1	-	9	56
Ohio	88	-	10	10	65
Michigan	83	1	4	51	83
Minnesota	87	-	-	35	38
Wisconsin	71	4	-	62	71
<b>TOTAL</b>	<b>722</b>	<b>13</b>	<b>62</b>	<b>176</b>	<b>390</b>

There are now two States, Michigan and Wisconsin, in which infection on ribes has been found in every county. Rust on ribes has now been reported from nearly all of the counties in the Region where white pine is produced in commercial quantities. In fact, there are few good white pine counties where pine infection also has not been discovered.

The finding of ribes infection initially in 1947 in 53 counties of the Southern Area is indicative more of diligent search on the part of our field men, than abundance of the rust. These findings were in connection with mapping and local control operations. In practically all cases only one to a few locations of infected ribes were found in each county, and infection was generally light at each location. Ribes cynosbati was the species most often found infected. These discoveries are significant, however, of the fact that rust is present, and that when favorable weather occurs we may expect widespread pine infection in unprotected stands.

Pine infection was found initially in 13 counties in 1947. In Illinois infection was on pines imported from Forest Service Nurseries in Wisconsin and Minnesota in 1943 and 1944, and apparently rust originated in such nurseries. Infection was light, averaging about one tree infected per 1,000 examined. In Indiana, where pine infection was first found on natural pines in 1947, and in Iowa, Michigan and Wisconsin, pine infection originated at the site. Indications from scouting are that 1943 and 1944 were years of heavy pine infection. Intensification of the rust on unprotected pines was found to be occurring in the northern States and in Iowa.

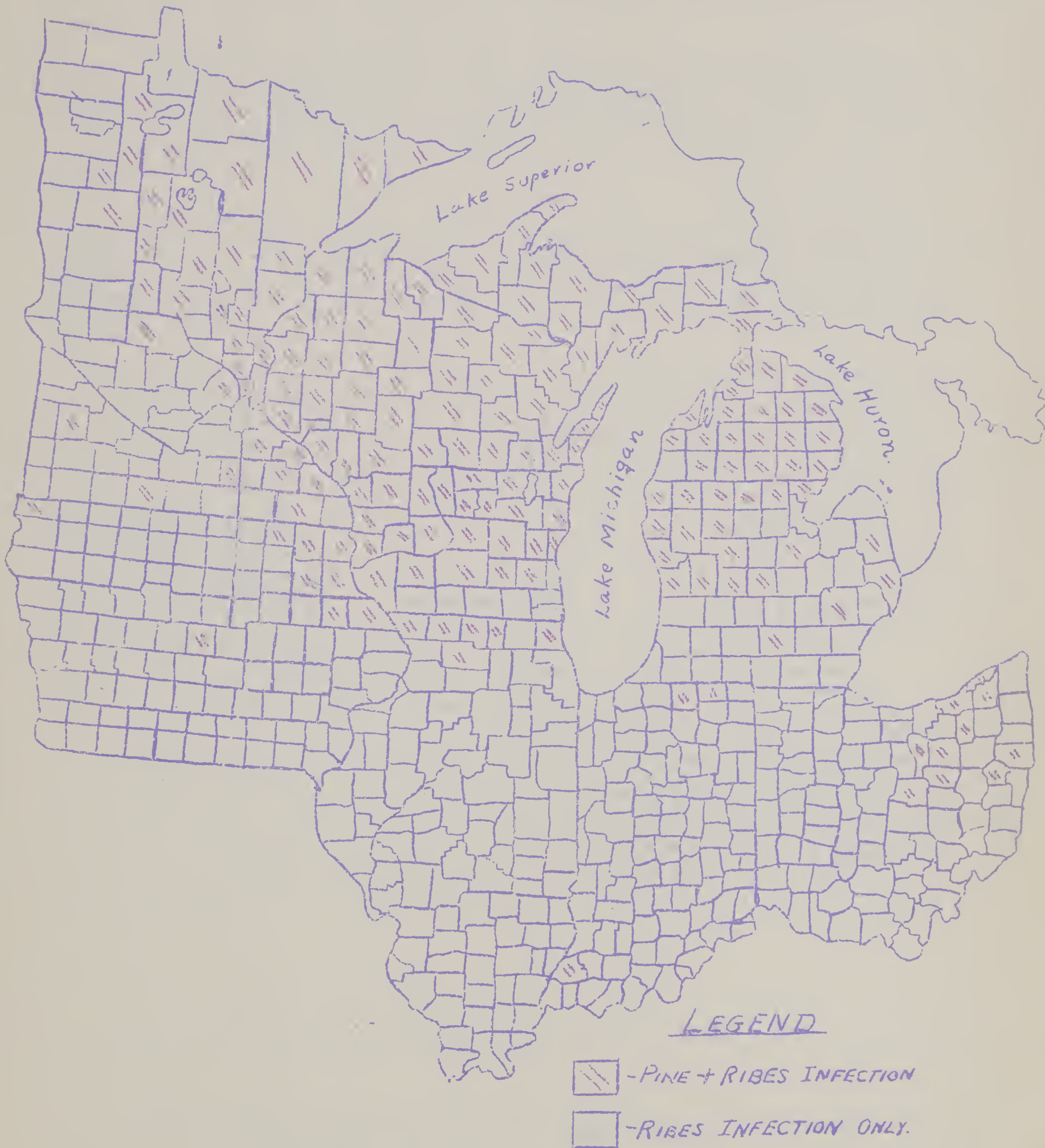
The status of rust spread at the end of 1947 in each of the States was as follows:

Illinois

Pine infection was found initially in 1947 in five counties, namely: Boone, Lake, Ogle, Stephenson and Winnebago Counties. Cankers originated



# STATUS OF BLISTER RUST INFECTION, NORTH CENTRAL REGION 1947







chiefly in 1942 and 1943 on pines imported from Forest Service nurseries in Minnesota and Wisconsin. It is believed that infection originated in such nurseries. Pine infection was light, averaging about 1 tree infected out of 1,000 inspected. To date, pine infection has been found in 6 Illinois counties.

Light ribes infection was found initially in 1947 in 9 counties as follows: Bureau, Henderson, La Salle, on R. cynosbati; Grundy, Kendall, Mercer on R. missouriense; and Henry, Kankakee and Will on R. nigrum. To date, ribes infection has been found in 24 northern Illinois counties.

### Indiana

Pine infection originating in Indiana was found in the State for the first time in 1947 in two counties: La Grange and Elkhart. One canker of 1943 origin in one location was found in each county. The only other pine infection found in the state was on imported pines in 1911. The infected pines were destroyed.

Ribes infection, mostly light and on R. cynosbati was found initially in 1947 in 39 counties, covering the northern two-thirds of the State. By name these counties are: Allen, Benton, Blackford, Boone, Carroll, Cass, Clay, Clinton, Delaware, Fayette, Fountain, Grant, Hamilton, Hancock, Hendricks, Henry, Howard, Jasper, Jay, Johnson, Lake, Madison, Marion, Miami, Montgomery, Owen, Parke, Pulaski, Putnam, Randolph, Shelby, Starke, Tipton, Tippecanoe, Wabash, Warren, Wayne, Wells, and White Counties. Weather conditions were not favorable for rust development, and these findings are more indicative of intensive search than of heavy rust spread. This situation does, however, emphasize the fact that rust is present and will do damage to unprotected white pines in years favorable to rust development. To December 31, 1947 rust on ribes has been found in 55 Indiana counties.

### Iowa

Pine infection was discovered initially in 1947 in Fayette County. At one location 12 trees were found infected out of 40 examined. To date, pine infection has been found in 9 counties. Pine infection is generally prevalent in unprotected stands in northeastern Iowa. Due chiefly to lack of scouting for the rust outside of northeastern Iowa, no ribes infection was reported from new counties. The rust is thoroughly established on pines and ribes in northeastern Iowa. To date, ribes infection has been reported from 56 counties.

### Ohio

No pine infection was reported from new counties in 1947, and only a few cankers found in known infection centers, chiefly because of past control work.

Ribes infection, however, was reported initially from 10 counties, all infections on R. cynosbati, and light. Weather conditions in summer were hot and dry and generally unfavorable to rust spread. The 10 counties containing



Ribes infection are as follows: Anglaize, Clinton, Darke, Fayette, Guernsey, Jefferson, Madison, Mahoning, Mercer, Preble. To date, ribes infection has been found in 65 of the 88 counties in the State.

### Michigan

Pine infection, probably originating in 1941, was found for the first time in Alpena County in 1947. Rust on pines and ribes is thoroughly established throughout the Upper Peninsula and in parts of Lower Michigan. A severe summer drouth in the southern part of the State retarded rust development. In the remainder of the State conditions apparently were generally favorable to the rust.

Ribes infection was initially found in 1947 in 4 southern counties: Calhoun, Hillsdale, Lenawee and Monroe. Rust on ribes has now been reported from all of the 83 counties.

### Minnesota

No ribes or pine infection was reported in 1947 from new counties, because it is now thoroughly established in the white pine belt, and no scouting was done outside this area. It seems probable that rust on ribes could be found in practically every county, if a search were made. Pine infection in 1947 continued to intensify in unprotected stands in the northeastern part of the State, with many cankers of 1942-1944 origin. Ribes infection was heavy and telia very abundant. To date, rust on pines has been reported from 35 and on ribes from 38 counties.

### Wisconsin

Pine infection, chiefly originating in 1942 to 1944 was found initially in 1947 in 5 counties: Dodge, Fond du Lac, Jefferson, Ozaukee and Waukesha. These infections were all light. Weather conditions, except in the southern part of the State where a prolonged drouth occurred, were generally favorable to rust development. In the north ribes infection was heavy with abundant telial development. Many cankers of 1941 to 1944 origin were observed in unprotected pine stands.

### White Pine

### Values

In the 1942 Report a discussion was given of the intrinsic, aesthetic and protection values of white pines, and its value as a basis of employment. The commercial value alone was estimated at about \$104,000,000. In present day terms, with ceilings lifted in 1946, it is probable that the commercial value could be set at \$150,000,000. In fact, white pine lumber sales were made in 1946 and 1947 in Minnesota at \$30.00 and \$40.00 per thousand board feet stumpage.



In the 1945 Report the effect of accelerated cutting of white pine on the control problem was discussed. In this Region a great deal of cutting of immature trees was done, at a sacrifice of future lumber, and, in many cases, at a loss of young white pine reproduction. The general effect of logging on the ribes population is to increase germination of seeds and encourage new growth by the disturbance of mineral soil, and reduction of shade.

### Surveys

In Table 1, the large amount of survey work performed in 1947 is given. Through preeradication survey alone there is an increase of 22,452 acres of white pine and 75,134 acres of control area. In general, there is a net loss of acreage as a result of resurveys and post-checks. Although increased acreages of white pine were found in previously mapped areas, this increase was more than overcome by taking pine acreages out of the control problem because values were no longer present, due to logging, fire, etc. As a result of all surveys, there was a net loss of about 7,300 acres of white pine, and 71,400 acres of control area. These losses were present in all states except Wisconsin, which showed a net gain of 13,219 acres of white pine, and 26,477 acres of control area.

### Ownership of White Pine

Acreage figures on ownership of white pine in the control problem are constantly changing, and can only be expressed in approximate terms. The status in 1947 is shown following:

Ownership	Natural	Planted	Total	Percent
Forest Service	131,876	50,112	181,988	16.0
Indian Service	60,698	1,126	61,824	5.5
National Park Service	15	-	15	Trace
Non-Federal Public	224,023	71,378	295,401	26.0
Private	552,358	44,107	596,465	52.5
Total	968,970	166,723	1,135,693	100.0
Percent	85.3%	14.7%		

### Checking

This activity, while a type of survey, is treated separately. Checking is the systematic evaluation of ribes eradication the same year the work is done to determine if acceptable ribes eradication work has been performed, or if the whole or certain portions of a given area need rework. If the check shows portions of an area with ribes live-stem averaging substantially more than 25 feet of live-stem per acre, those portions should be reworked.

The results of checking upon ribes eradication work in 1947 are shown by States and ownership classes in Table 4. Note that ribes were counted on 2,902.66 strip acres. An acre of sample in checking represents a strip 50 chains long and one-fifth chain wide. Since there are 80 chains in a mile, it is evident that the work of checking in 1947 required the covering of about 1,814 miles of strip.



Good ribes eradication work was done in 1947, as shown by Table 4. Of the 145,901 acres worked and checked, 99.5 percent showed less than 25 F.L.S. per acre after eradication. The average for all checking was 1.9 bushes and 4.0 F.L.S. per acre.

### Local Control Accomplishment

A more detailed discussion of local control accomplishments on the basis of ownership classes is given in the sections devoted to control work on state and private lands, Work Project BLR-3; control work on National Forests, Project BLR-4; and control work on Indian Reservations, Project BLR-7. The discussions following will pertain to the work as a whole.

#### Local Control in 1947

In Tables 2, 2A, and 3, local control work performed in 1947 is shown classified by states and work agencies; states and ownership classes; and ownership classes and work agencies. Considering both initial and rework there were 67,312 acres of white pine protected by removing 3,748,277 ribes from 179,201 acres of control area at a cost of 27,767 man-days. Approximately 50 percent of the acreage covered was initial; 33 percent was second working, and 17 percent was third and other workings.

Due to the severe reduction in funds for control work after July 1, 1947, there was much less control work done in 1947 than in 1946. Using the 1946 work as 100, the 1947 accomplishments in relation to 1946, are as follows:

Operating Agency	Work in 1947 in relation to 1946, 1946 = 100		
	Total Acres Worked-1947	Ribes Pulled 1947	Man-Days Used-1947
Forest Service	62	91	75
Indian Service	165	112	134
Bureau-State	53	53	46
Total	60	77	69

The greatest reduction in work was in the Bureau-State Project, where less than half as many man-days were used in 1947 to perform slightly more than half as much work as in 1946. The Forest Service Project fared better, and work on the Indian Service program was decidedly larger in 1947 than in 1946.

The greatest reduction in work came in the period July 1 to September 30 in 1947, when about one-third of the year's work was accomplished. In years of full programs most of the control work is done in this period. In July to September, 1946, for example, there was approximately 5 times as much acreage cleared of ribes as in the corresponding period of 1947, when approximately 50,000 acres were worked. Had appropriations been maintained at the 1946 level, it is logical to believe that 250,000 acres, or 200,000 acres more than actual, could have been cleared of ribes in the period July 1 to December 31, 1947.



The largest acreage worked was under state and private ownership, using Bureau-State funds. The next largest acreage was covered by men employed on Forest Service-Regular funds. The largest number of man-days were employed on Bureau-State funds.

Wisconsin led the States in the amount of acreage cleared of ribes, followed by Michigan. The largest number of ribes was destroyed and the greatest number of man-days was employed in Wisconsin. Particularly in Minnesota, the general abundance of ribes on areas worked on the Superior National Forest and Grand Portage Indian Reservation accounted both for the high number of ribes pulled and of man-days used. The work done in Minnesota was probably the most pressing since blister rust is extremely active in the north portion, and in spite of all efforts is yearly killing tens of thousands of young white pines. These pines cannot be protected in time because of the enormity of the job and the inadequacy of funds and labor to do the necessary control work. Particularly in northeastern Minnesota, careful attention was given to performing ribes eradication on as large contiguous blocks of good white pine as possible which were most in immediate need of ribes eradication. This was done in order to forestall inevitable losses which would have occurred in these stands had not ribes eradication work been performed.

Control work was resumed in Indiana and Ohio, under the leadership of a supervisor in each state. In Illinois, the work was chiefly rework on state and private lands to maintain protection afforded by initial working several years ago. In Iowa the program was larger than usual. Men were employed on State Conservation and Bureau funds for protection of white pines under State ownership. The rapid intensification of the rust, discovered in the last two years, has focused attention to the need for immediate protection work.

#### Improvement in Local Control Procedure

Following Mr. Offord's recommendation, cut stems of ribes difficult to pull were treated with a 20 percent water solution of 2,4-D. This was furnished the crews in 8 oz. oil cans obtained from W.A.A. On the Superior National Forest each crew man was supplied with a discarded, 2 oz. insect repellent bottle filled with a 20 percent water solution of 2,4-D. A few drops were applied to ribes stems cut close to the ground. Ribes bushes so treated will be checked in the spring of 1948.

In Evergreen City Park, Sheboygan, Wisconsin a combination chemical-spray and hand-pulling crew was used. There was an abundance of R. americanum, R. hirtellum, R. cynosbati, and R. glandulosum surrounding valuable aesthetic pine in the Park. Foliage spray of 2,4-D is effective only on R. americanum. String lines were laid out in advance. Three lead men uprooted all but the R. americanum bushes. Following the 3 men were 2 men with back spray pumps, spraying R. americanum bushes. The crew foreman checked both operations. It is calculated that the area was cleared of ribes at one quarter the cost of hand pulling alone. Further, it is probable that R. americanum bushes sprayed will be much less likely to produce sprouts than crowns left in the soil after an imperfect hand pulling job.



In Minnesota the three-man eradication crew, as used in the Northwest, was given a good try-out and found effective under conditions of few to medium ribs. In this method string is laid ahead of the crew. The crew leader works in the middle and the three men cover the strip.

Several advantages are apparent: (1) The crew leader works in line, thus becoming directly productive; (2) Each man tends to cover a wider strip; (3) Less time is lost by crew if ribs are found on one side of strip; (4) It is easier and quicker to line up a three-man, than a larger crew; (5) Generally men prefer to be in a smaller crew; (6) Results so far indicate increased man-day production without loss of efficiency.

There are some disadvantages: (1) Since no one is checking immediately back of the line, each worker is responsible for his own lane, and poor work may not be discovered until a formal check is made; (2) Cost of field supervision is increased because one out of three is a crew leader, instead of one out of six; (3) More work placed on Supervisor because of greater number of units, and the laying of twine ahead of crew; (4) More string per area is required.

### Status of Control

The present status of control by States and ownership classes is given in Tables 6 and 7 and graphically in Charts 1 and 2. As of December 31, 1947 the status of control by States including all ownerships is shown in the following table:

State	Control Area	Percent	
		Initially Worked	On Maintenance
Illinois	13,386	83.3	17.5
Indiana	188,596	41.2	27.5
Iowa	50,001	68.1	37.6
Ohio	470,699	39.1	16.3
Michigan	1,211,025	89.0	33.0
Minnesota	590,866	63.2	16.0
Wisconsin	1,438,121	79.1	26.2
Region Total	3,962,694	73.1	25.8

It is apparent that there is still a great deal of work to be done before the white pine worth protecting is all on a maintenance basis. While 73 percent of the control area has been initially worked, only 26 percent is on a maintenance basis. Thus, not only is there need for performing initial eradication on approximately 27 percent of the areas, but approximately 47 percent of that already initially worked has to be examined and possibly reworked before it is on maintenance.

From the above table it appears that Michigan, with 89 percent of its control area initially worked and 33 percent on maintenance, is the farthest advanced of all the States toward the goal of having control accomplished around all worthwhile stands. While 27 percent of the control area in Indiana



and 16 percent in Ohio are shown as being on maintenance it is probable that a much higher percent can be placed on maintenance in these States when it is possible to adequately examine white pine areas in the southern portions where ribes are relatively scarce or absent.

In the northern part of the three Lake States, especially in northeastern Minnesota, there on many sites white pine is the best possible crop to grow, the favorable seasons since 1937 have very markedly increased the germination and growth of white pine reproduction. This increase in the number of young white pine trees has not only extended the known limits of white pine areas but has also materially tended to increase the stocking of these trees in existing white pine stands.

Unfortunately, however, the conditions favorable to white pine reproduction have also been favorable to rust spread and development. The net result is that in unprotected stands the rust is killing young white pines at a greater rate than they are coming in through natural regeneration.

During the war years when funds for blister rust control and labor were scarce, our only sound approach to the problem has been to protect the very cream of the crop and to make our funds go as far as possible in saving the greatest number of white pine trees. In so doing, however, it is inevitable that millions of young white pines on tens of thousands of acres will be killed. It is hoped that funds and labor will be made available so that this destruction of young white pines can be greatly lessened if not halted, and that white pine sites may be permanently cleared of ribes, thus allowing future generations of white pines to grow undamaged in blister rust invaded areas.

As blister rust control workers we must look farther than saving the existing white pine crop. We must remember that the presence of ribes on a good white pine site destroys not only the existing stand but prevents indefinitely the production of future white pine forests. Thousands of acres in the northern part of the three Lake States would be best utilized if they were in white pine production. Therefore, as funds and labor permit, the protection of such white pine sites must be taken into consideration in blister rust control plans.

#### Cumulative Local Control

In Table 8, total eradication work by workings, States, and ownership classes are shown from the time work started to and including 1947. Acreages for initial working in Table 8 are gross and will differ from net initially worked acreages in Tables 6 and 7. In the latter tables, if an area after initial working was burned over and pine values destroyed, acres initially worked were removed from the status table. Such acres are retained, however, in Table 8, because it is a statement of work done.

It may be noted in Table 8 that 3,304,919 acres have been worked initially; 986,812 acres, or 30 percent worked twice; and 165,984 acres, or 5 percent worked more than twice.



In Table 8, ribes destroyed per acre are shown. Since this is a cumulative table with large acreage and ribes figures, the per acre figure should be fairly representative of ribes abundance in the State or ownership class concerned. In Chart 3, the average number ribes destroyed per acre in "All Workings" is used, in order to obtain as large a base as possible.

In order of increasing abundance of ribes, starting with the smallest number per acre, the States line up as: Indiana, Ohio, Michigan, Wisconsin, Illinois, Iowa, Minnesota. Iowa is second high primarily because much of the acreage in control zones around shelterbelts consisting only of cultivated fields, was not counted. This reduced the number of acres to apply against the number of ribes pulled. The average number of ribes per acre in Minnesota, 134.8 is nearly half again larger than its nearest competitor, Iowa, with 91.1 ribes per acre.

On the basis of ownership classes, ribes destroyed per acre were much more abundant on Indian Reservations, 202.5 per acre, than on National Forests, 52.0 per acre, or on private lands, 56.6 per acre, or on state lands, 50.1 per acre.

In Table 8A a summary of ribes eradication, all workings, from inception through 1947 is given by States, ownership classes, and operating agencies. The chief value of Table 8A is to show the operating agencies which have performed ribes eradication on lands under varying ownerships. Thus, on lands under Forest Service ownership, Bureau funds have been used to eradicate ribes from 125,428 of the total 460,292 acres worked. On the other hand, Forest Service funds have been used to work 845 acres out of 2,679,399 acres of private lands worked. It is economically sound for land of all ownerships to be covered for ribes within the working radius of a crew of trained men. The working of Forest Service pine by Bureau crews, and of State and private white pine by Forest Service crews can thus be balanced off, one against the other.

### Nursery Sanitation

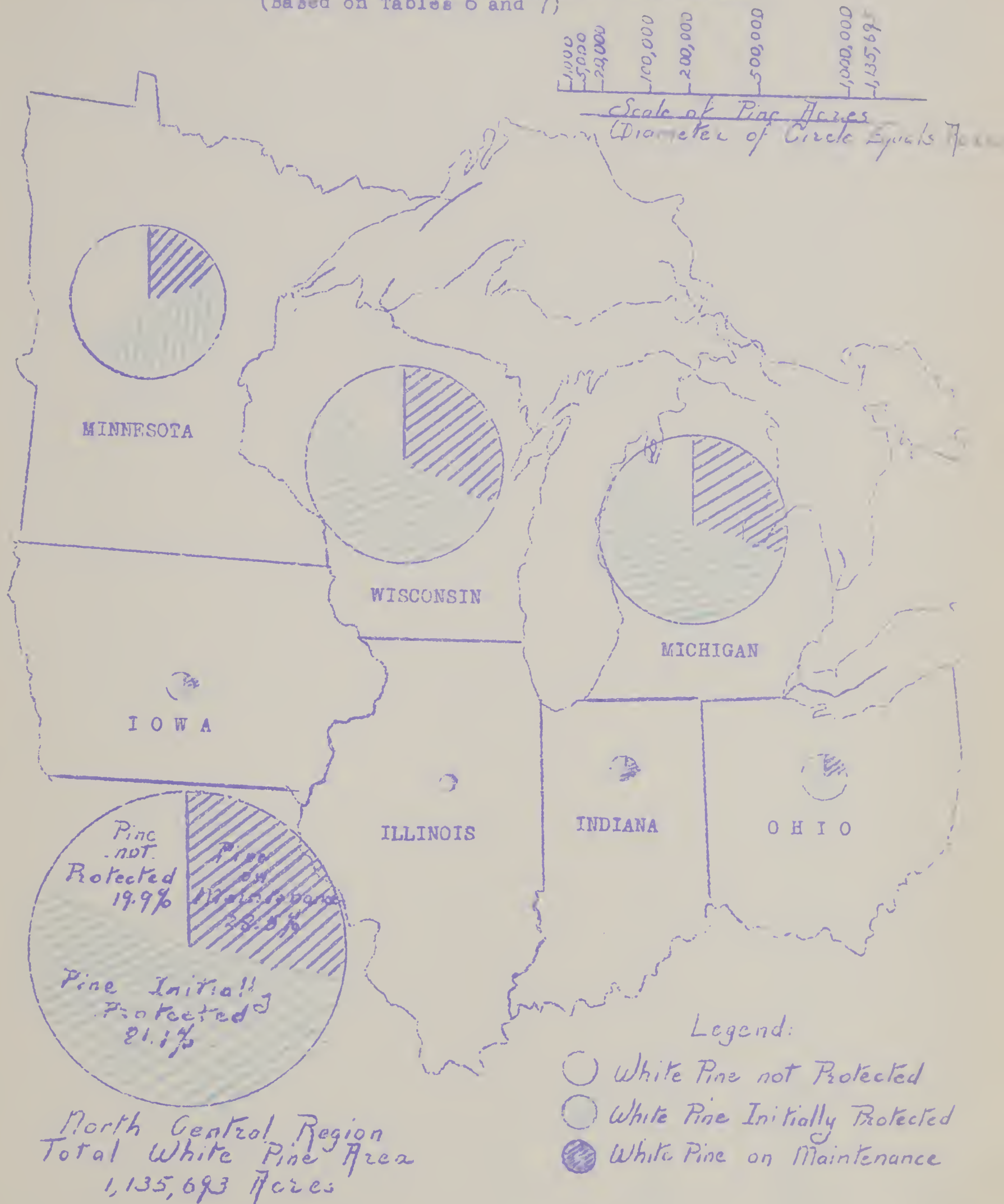
#### Work Done 1947

There were five nurseries given sanitation workings during 1947. According to ownership, one was Forest Service, one was Soil Conservation Service, one was State and two were private. There were 884 ribes removed from 2,126 acres of control area at a cost of 76 man-days. This work provided protection for approximately 6,200,000 white pine trees. In protecting nurseries against blister rust, the full 1500-foot protection zone for all ribes and one-mile wide zone for cultivated black currants are maintained. The reason for this additional protection width is because nursery stock is often grown under overhead watering systems which create more or less optimum infection conditions. In order to maintain ribes-free conditions and to insure so far as possible the production of rust-free white pine planting stock, periodic workings of white pine growing nurseries are performed at least every two years. At the present time, practically all of our white pine producing nurseries, except a few private nurseries, have been protected, and the problem involves chiefly the maintenance of this protection work. Nursery sanitation performed in 1947 is shown in Table 9.



# CHART 1

STATUS OF BLISTER RUST CONTROL WORK, ALL OWNERSHIPS,  
IN NORTH CENTRAL REGION - 1947. ACRES OF WHITE PINE  
(Based on Tables 6 and 7)



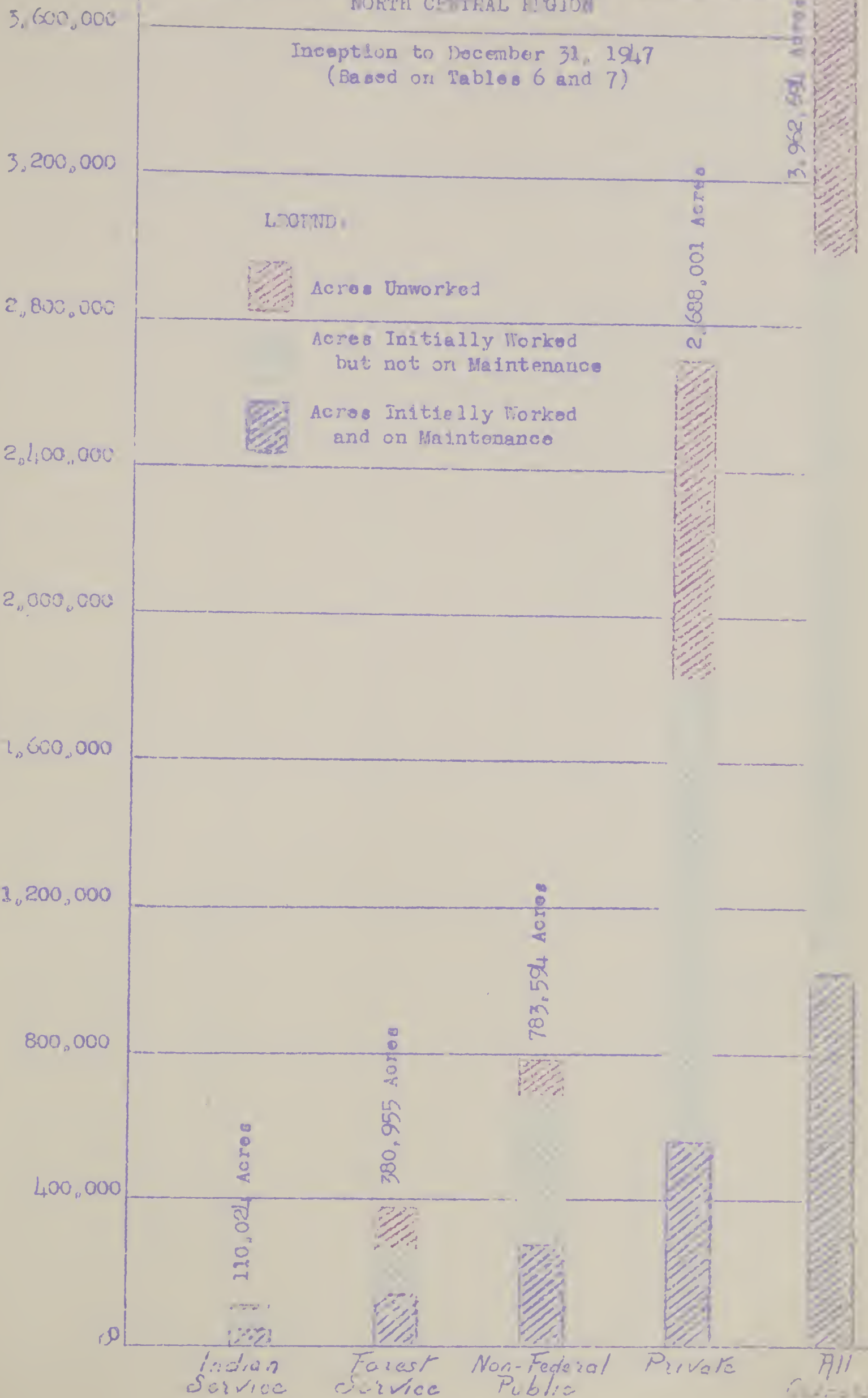




STATUS OF CONTROL BY OWNERSHIP CLASSES, ALL STATES  
NORTH CENTRAL REGION

Inception to December 31, 1947  
(Based on Tables 6 and 7)

ACRES IN CONTROL AREA







# CHART 3

Rebes Destroyed per Acre by States and Ownership Classes, All Woredings,  
Inception to December 31, 1947. North Central Region  
(Based on Table 8)

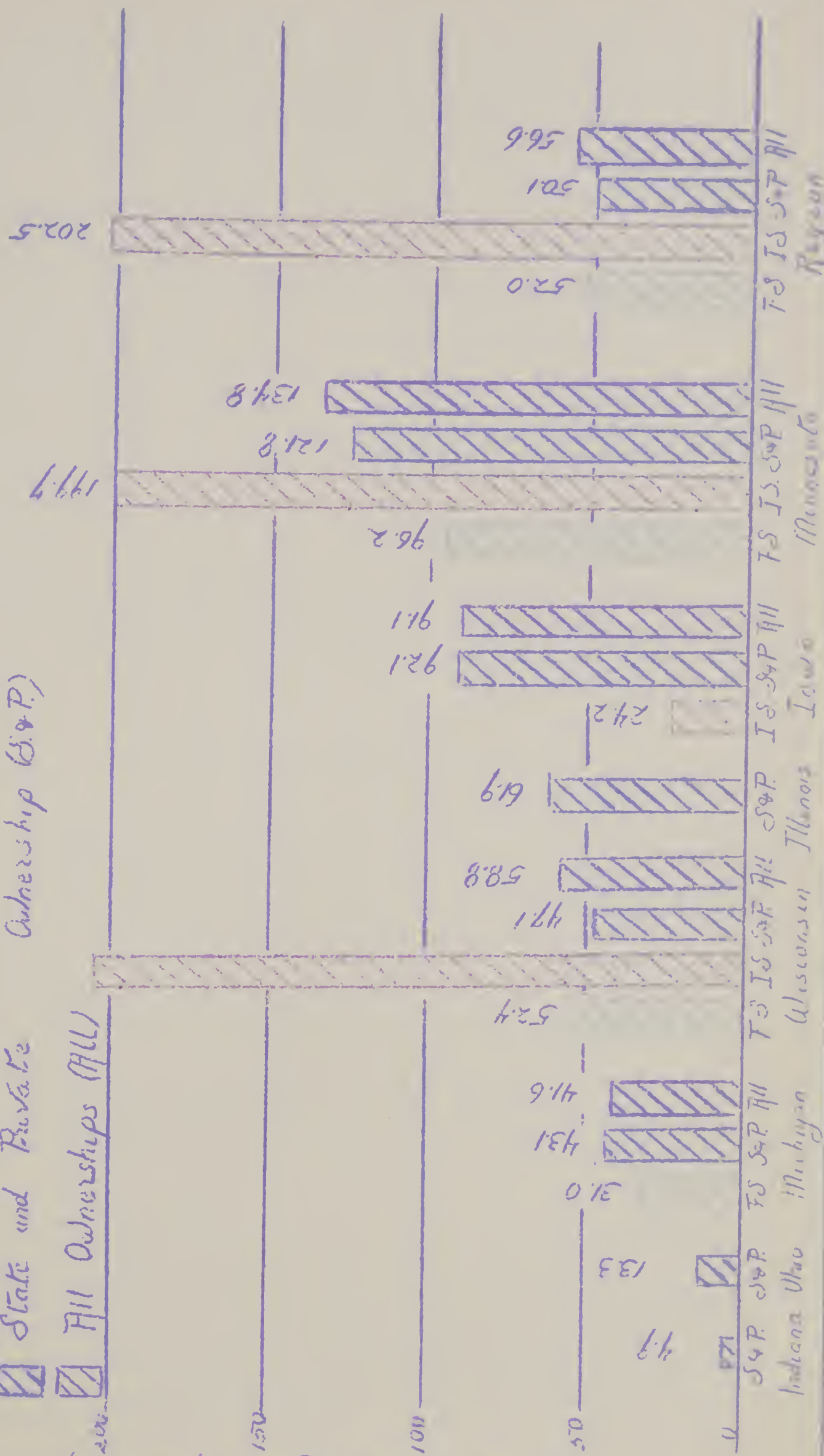
Forest Service Ownership (F.S.)

Indian Service Ownership (I.S.)

State and Private Ownership (S.&P.)

All Ownerships (All)

Rebes Destroyed per Acre







### Present Status of Nursery Sanitation

The following table, taken from Census Table E, shows the present status and cumulative work done, 1918 to 1947, in nursery sanitation in this Region:

State	Number Nurseries Worked			Total Acres Worked	Total Ribes Destroyed	Total Man-Days Used
	Protective Zones		Total			
	Retained	Dropped				
Illinois	5	3	8	2,520	50,378	378
Indiana	2	4	6	3,750	11,351	60
Iowa	7	2	9	3,436	67,106	824
Ohio	4	9	13	6,131	59,594	1,890
Michigan	7	6	13	4,686	1,112,867	16,322
Minnesota	6	11	17	5,804	1,325,183	5,017
Wisconsin	10	7	17	4,985	887,178	8,105
Region Total	42	42	83	31,312	3,553,687	30,596

The usual reasons for not maintaining nursery sanitation zones around white pine producing nurseries are that such nurseries discontinued the growing of white pine, or the prevalence of ribes made the sanitation work too costly to maintain.

### Control Area Permits

As defined in Federal Quarantine 63, the States of Michigan, Minnesota, Ohio and Wisconsin are White Pine Control Area States. The interstate movement of ribes into designated control areas within these States can only be done if each ribes shipment carries a control area permit issued by the proper State Plant Quarantine Officer. The issuing of control area permits is a function of the State which has been carried on for several years. Previous to 1943, however, no record on this activity has been made in our Annual Reports. A description of the procedure in issuing control area permits is given in the 1943 Annual Report, and will not be repeated here.

As noted in Table 5, during 1947, out of 797 applications for ribes shipping permits, 80.6 percent were approved. The large majority of the shipments were made in the spring.

### Violations of Federal Quarantine 63

As reported by the Division of Domestic Plant Quarantine, during the fiscal year 1947, there were 20 violations of Federal Quarantine 63, all intercepted at Chicago, as ribes shipped without permits, ten shipments to Michigan; one to Minnesota; and nine to Wisconsin. This is decidedly smaller than the 182 violations reported going to the same four states in 1945, and 127 in 1946. In fact, for the whole United States, there were only 33 violations of Federal Quarantine 63 in fiscal year 1947.

## Cultivated Black Currant Elimination

The only work under this heading in 1947 was the destruction of 21 cultivated black currant plants in 4 plantings. To the end of 1947 in the Region, 288,642 cultivated black currant bushes in 34,774 plantings had been destroyed. There remain 996 known plantings with 6,656 cultivated black currant bushes not yet destroyed. Thus, 97.7 percent of all known bushes have been eliminated.

## Canker Pruning

A limited amount of canker pruning in protected areas was performed in Iowa and Minnesota, as noted in Table 14. In 1947, there were 5,420 cankers removed. There were 6,144 trees treated, some of which were crop trees silviculturally pruned. To date, 153,514 cankers have been removed from 67,694 trees, and 2,307 infected trees have been cut down, chiefly in Iowa, Michigan and Minnesota. It is believed that when adequate labor is again available, canker pruning on selected crop trees in a protected stand can be economically justified, as a control measure.

## Informational Activities

There was only one blister rust exhibit in 1947, that at the Wisconsin State Fair held at Milwaukee. The eastern blister rust control film was shown at various club and school meetings. Pamphlets were distributed.

Correspondence in connection with issuing control area permits for shipping ribes continued to be an excellent way of acquainting ribes and pine owners with blister rust control.

During the winter and spring seasons motion picture scenes were taken throughout the Region for a short, educational film entitled "Paul Bunyon Had a Son." Just as Paul Bunyon cut down the great white pine forests, his son is as anxious to bring them back through blister rust control and other good conservation practices. Most of the shots were taken by a professional photographer from the Motion Picture Service, but some of the winter shots were taken by E. E. Honey, of the Milwaukee Office. State and District Leaders aided in finding suitable shots for the picture.



Experimental Chemical Eradication of Ribes  
(Work by E. E. Honey, Report by J. E. Brooker)

Following a plan outlined by H. R. Offord in 1946, Dr. E. E. Honey conducted experiments in chemical eradication of ribes along two major lines.

- (1) Dosage and concentration studies on susceptible ribes, and
- (2) Studing to find chemicals to kill resistant ribes.

During 1947 Dr. Honey took readings on the plots he established in 1946 and also put in a few additional ones in 1947 following suggestions made by Mr. Offord. Unfortunately lack of time, unfavorable weather in spring, lack of travel funds after July 1, and the termination of Dr. Honey's employment with the Bureau on October 4 greatly restricted the scope of experimental chemical eradication this year. Data and conclusions which follow are drawn from Dr. Honey's field notes and were assembled by others after he left our organization.

In general there appears to be only one species of wild ribes in this region that might be classed as really susceptible to treatment of the intact bushes by 2,4-D formulations. It is Ribes americanum. Last year it was suspected, on the basis of preliminary observations, that R. missouriense might also be classed in this category, but subsequent inspections reveal that considerable sprouting from the crown results after much of the live stem has been killed. In fact it was found that the greater the kill of aerial parts of R. missouriense the more numerous and vigorous the resulting sprouts.

Thus, of the nine most common species of wild ribes that occur in this region, R. americanum is the only one that can be classed at present as "susceptible" to foliage spraying with 2,4-D compounds.

Even this species will not succumb entirely unless every branch is sprayed. Great care must be taken to treat inconspicuous branches--those that are hidden by other vegetation and especially those that follow along the ground and are frequently hidden by grass.

It appears from Dr. Honey's notes that the easiest, simplest and entirely adequate concentration of 2,4-D formulations for treating R. americanum by spraying is:

500 ppm. 70% Sodium Salt of 2,4-Dichlorophenoxyacetic acid, at a dosage of 1 gallon solution per acre.

or

250 ppm 40% Butyl Ester of 2,4-Dichlorophenoxyacetic acid, at a dosage of 1/2 gallon solution per acre.

The spray must be applied during the active growing season and all aerial parts of the plants covered to a point of dripping. An ordinary 3 1/2 gallon garden pressure sprayer was used to treat the bushes.



expressed in more simpler terms, the most practical combination of 2,4-D formulations and rates for the treatment of R. americanum is:

1.12 oz. 70% Sodium Salt of 2,4-D to 10 gallons water (about a slightly rounded teaspoonful of the Sodium Salt per gallon of water)

or

1.05 fl. oz. 40% Butyl Ester of 2,4-D to 10 gallons water.

If applied to all of the aerial parts of the plant and during the active growing season, satisfactory results can be expected. Spray should be applied to the foliage to the point of dripping.

Aqueous solutions appear to be most satisfactory according to present information. The dusts that were tried did not give a satisfactory kill.

Mixtures of 2,4-D in kerosene or fuel oil, while they appear to produce quicker results at first, tend to encourage sprouting from the crown.

Quick killing of the aerial parts by oils or other materials immediately toxic to the foliage produces much the same effect as a ground fire. The above-ground parts are spectacularly killed but a vigorous sprouting from the crown or stem results afterward.

Ribes missouriense is not entirely susceptible to 2,4-D sprays. While a considerable percentage of the stems may be killed there follows a proportionate sprouting from the crown. Hence, this species must be classed with the other not too susceptible ribes species which occur in this region.

Ribes Ranked According to Apparent Degree of Susceptibility  
to 2,4-D Formulations - North Central Region  
(Most susceptible first in descending order)

1. Ribes americanum
2. Ribes hudsonianum
3. Ribes missouriense
4. Ribes oxycanthoides
5. Ribes hirtellum
6. Ribes cynosbati
7. Ribes lacustre
8. Ribes triste
9. Ribes glandulosum

The above classification is from general observations only. No experiments on R. hudsonianum have been tried but we believe that it will prove to be quite susceptible to 2,4-D.

The important point is that if universal chemical spray measures are to be adopted in ribes eradication work, it will be necessary to find a chemical that will kill R. triste and R. glandulosum. To date, none of the 2,4-D formulations tested as sprays have proven effective on any ribes species other than R. americanum.

A tabulation of pertinent data from which the foregoing general observations were made is presented in the following condensed tables. Treatments were made in 1946 and results observed in 1947.



Concentration (Parts per Million)	Volume applied (Gals. per Milacre)	Plots	Treated		Killed		Per Cent Killed		Bushes & Crows Survived after Treatment
			No. Bushes	P.L.S.	No. Bushes	P.L.S.	Bushes	P.L.S.	Treatment

A 4 Plots, 16 Milacres each (64 Milacres) Treated with "Dow A-510" (70% Sodium Salt, 2,4-D) in Water									
250 ppm.	$\frac{1}{2}$ gal.	4	25	504	14	273	56.0	50.1	0
	1 "	4	24	515	19	498	79.1	96.6	0
	2 "	4	21	590	18	587	85.7	99.4	2
	3 "	4	36	1,250	34	1,250	94.4	100.0	1
Sub-Total		16	106	2,899	85	2,608	86.2	98.0	3
500 ppm.	$\frac{1}{2}$ gal.	4	21	335	19	316	90.4	91.9	0
	1 "	4	15	501	14	501	93.3	100.0	1
	2 "	4	22	887	21	887	95.4	100.0	1
	3 "	4	22	443	22	443	100.0	100.0	0
Sub-Total		16	80	2,166	76	2,147	95.0	98.2	2
750 ppm.	$\frac{1}{2}$ gal.	4	27	795	24	790	88.8	99.4	2
	1 "	4	21	711	21	711	100.0	100.0	0
	2 "	4	22	497	22	437	100.0	100.0	0
	3 "	4	9	280	9	280	100.0	100.0	0
Sub-Total		16	79	2,223	76	2,218	96.2	99.8	2
1000 ppm.	$\frac{1}{2}$ gal.	4	26	770	21	757	80.7	98.3	5
	1 "	4	25	1,696	24	1,696	96.0	100.0	1
	2 "	4	33	825	33	825	100.0	100.0	0
	3 "	4	11	435	11	435	100.0	100.0	0
Sub-Total		16	95	3,726	89	3,713	93.7	99.7	6
All Concentrations	$\frac{1}{2}$ gal.	16	99	2,444	78	2,138	78.8	87.5	7
	1 "	16	85	3,423	78	3,406	91.8	99.5	2
	2 "	16	98	2,739	94	2,736	95.9	99.9	3
	3 "	16	78	2,408	76	2,408	97.4	100.0	1
Grand Total		64	360	11,314	326	10,688	90.6	97.0	23

B 4 Plots, 16 Milacres each (64 Milacres) Treated with Sherwin Williams "Weed-No-More" (40% Butyl Ester 2,4-D) in Water									
250 ppm.	$\frac{1}{2}$ gal.	4	22	1,173	22	1,173	100.0	100.0	0
	1 "	4	13	1,045	13	1,045	100.0	100.0	0
	2 "	4	31	2,575	31	2,575	100.0	100.0	0
	3 "	4	20	940	20	940	100.0	100.0	0
Sub-Total		16	86	5,733	86	5,733	100.0	100.0	0
500 ppm.	$\frac{1}{2}$ gal.	4	20	555	20	555	100.0	100.0	0
	1 "	4	18	372	18	372	100.0	100.0	0
	2 "	4	21	929	21	929	100.0	100.0	0
	3 "	4	15	639	15	639	100.0	100.0	0
Sub-Total		16	74	2,495	74	2,495	100.0	100.0	0
750 ppm.	$\frac{1}{2}$ gal.	4	24	911	23	911	95.8	100.0	1
	1 "	4	28	742	28	742	100.0	100.0	0
	2 "	4	15	644	15	644	100.0	100.0	0
	3 "	4	18	619	18	619	100.0	100.0	0
Sub-Total		16	85	2,916	84	2,916	98.8	100.0	1
1000 ppm.	$\frac{1}{2}$ gal.	4	31	687	29	687	93.5	100.0	2
	1 "	4	25	708	23	708	92.0	100.0	2
	2 "	4	28	1,028	28	1,028	100.0	100.0	0
	3 "	4	30	915	30	915	100.0	100.0	0
Sub-Total		16	114	3,338	110	3,338	96.5	100.0	4
All Concentrations	$\frac{1}{2}$ gal.	16	97	3,326	91	3,326	96.9	100.0	3
	1 "	16	84	2,867	82	2,867	97.6	100.0	2
	2 "	16	95	5,176	95	5,176	100.0	100.0	0
	3 "	16	83	3,113	83	3,113	100.0	100.0	0
Grand Total		64	377	14,482	354	14,482	98.6	100.0	5



Concentration (Parts per million)	Dose (Gals. applied per Milacre)	Con- ber of Mil- acres	Treated No. Bushes	F.L.S.	Killed No. Bushes	F.L.S.	Per Cent Killed	Bushes with Crown Sprouts after Treatment
A. 2 Plots, 16 Milacres each (32 Milacres) Treated with Dow A-510 (70% Sodium Salt 2,4-D) in Water								
250 ppm.	1/2 gal.	2	13	400	1	215	7.7	53.8
	1 "	2	8	330	1	222	12.5	67.3
	2 "	2	9	350	0	179	0.0	51.1
	3 "	2	9	275	0	180	0.0	65.5
	Sub-total	8	39	1,355	2	796	5.1	58.7
500 ppm.	1/2 gal.	2	13	432	3	340	23.1	78.7
	1 "	2	9	275	0	84	0.0	30.5
	2 "	2	10	405	1	264	10.0	65.7
	3 "	2	10	260	0	225	0.0	86.5
	Sub-total	8	42	1,372	4	713	9.5	66.5
750 ppm.	1/2 gal.	2	6	270	0	262	0.0	97.0
	1 "	2	12	400	1	341	8.3	85.3
	2 "	2	10	470	2	313	20.0	66.5
	3 "	2	7	570	2	562	28.6	98.6
	Sub-total	8	35	1,710	5	1,478	14.3	86.4
1000 ppm.	1/2 gal.	2	11	530	1	447	9.1	84.3
	1 "	2	6	237	2	202	33.3	85.2
	2 "	2	11	233	7	214	63.6	91.8
	3 "	2	10	605	8	605	80.0	100.0
	Sub-total	8	38	1,605	18	1,468	47.4	91.5
All Con- centra- tions	1/2 gal.	8	43	1,632	5	1,264	11.6	77.5
	1 "	8	35	1,242	4	849	11.4	68.4
	2 "	8	40	1,458	10	970	25.0	66.5
	3 "	8	36	1,710	10	1,572	27.8	91.9
	Grand Total	32	156	5,642	29	4,655	18.8	77.0
B. 2 Plots, 16 Milacres each (32 Milacres) Treated with Sherwin Williams "Weed-No-More" (40% Butyl Ester 2,4-D) in Water								
250 ppm.	1/2 gal.	2	6	285	2	260	33.3	91.2
	1 "	2	6	435	0	295	0.0	67.8
	2 "	2	13	475	0	421	0.0	88.6
	3 "	2	8	295	1	293	12.5	99.3
	Sub-total	8	33	1,490	3	1,269	9.1	85.2
500 ppm.	1/2 gal.	2	2	320	0	314	0.0	98.1
	1 "	2	3	235	0	234	0.0	99.6
	2 "	2	4	260	1	179	25.0	68.8
	3 "	2	6	290	0	257	0.0	88.6
	Sub-total	8	15	1,105	1	934	6.7	89.0
750 ppm.	1/2 gal.	2	3	475	0	434	0.0	91.4
	1 "	2	3	270	1	255	33.3	94.4
	2 "	2	3	200	1	193	33.3	96.5
	3 "	2	8	345	3	343	37.5	99.4
	Sub-total	8	17	1,290	5	1,225	29.4	95.0
1000 ppm.	1/2 gal.	2	14	400	7	328	50.0	82.0
	1 "	2	7	250	1	244	14.3	97.6
	2 "	2	4	265	1	252	25.0	95.1
	3 "	2	5	165	2	108	40.0	65.5
	Sub-total	8	30	1,080	11	932	36.7	86.3
All Con- centra- tions	1/2 gal.	8	25	1,460	9	1,336	36.0	90.3
	1 "	8	19	1,190	2	1,028	10.5	86.4
	2 "	8	24	1,200	3	1,045	12.5	87.1
	3 "	8	27	1,095	6	1,001	22.2	91.4
	Grand Total	32	95	4,935	26	4,410	21.1	88.8



Test Table 3 - Results of Concentration and Doseage Tests, *Slime herbicide*, Grand Portage Indian Reservation, Minnesota  
Treatments Applied August 26, 1946 Results Observed June 22, 1947

Concentration (Parts per Million)	Dosage (Gals. applied per Milacro)	Number of Mil- acres	Treated		Killed		Per Cent Killed		Bushes with Crown Sprouts after Treatment
			No. Bushes	P.L.S.	No. Bushes	F.L.S.	Bushes	F.L.S.	
A. Plots Treated with "Dow A-510" (70% Sodium Salt 2,4-D) in Water									
250 ppm.	$\frac{1}{2}$ gal.	2	11	32	0	25	0.0	78.1	6
	1 "	1	3	21	0	19	0.0	90.0	3
	2 "	2	9	70	0	39	0.0	55.7	9
	3 "	-	-	-	-	-	-	-	-
	Sub-Total	5	23	123	0	83	0.0	67.5	18
500 ppm.	$\frac{1}{2}$ gal.	-	-	-	-	-	-	-	-
	1 "	2	8	15	0	11	0.0	76.7	8
	2 "	2	6	178	0	132	0.0	74.2	6
	3 "	2	5	39	2	20	40.0	51.3	1
	Sub-Total	6	19	232	2	163	10.5	70.3	15
750 ppm.	$\frac{1}{2}$ gal.	1	1	5	0	5	0.0	100.0	1
	1 "	2	9	71	0	67	0.0	94.4	9
	2 "	2	12	89	3	89	25.0	100.0	9
	3 "	1	3	6	2	5	66.7	83.3	1
	Sub-Total	6	25	171	5	166	20.0	97.1	20
1000 ppm.	$\frac{1}{2}$ gal.	1	1	50	0	40	0.0	80.0	1
	1 "	2	8	39	0	2	0.0	5.1	0
	2 "	2	5	48	0	45	0.0	93.8	3
	3 "	1	11	125	0	75	0.0	60.0	11
	Sub-Total	6	25	262	0	162	0.0	61.8	15
All Con- centra- tions	$\frac{1}{2}$ gal.	4	13	87	0	70	0.0	80.5	8
	1 "	7	28	146	0	99	0.0	67.8	20
	2 "	8	32	385	3	305	9.4	79.2	27
	3 "	4	19	170	4	100	21.1	58.8	13
	Grand Total	23	92	788	7	574	7.6	72.6	68
B. Plots Treated with Sherwin-Williams "Weed-No-More" (40% Butyl Ester of 2,4-D) in Water									
250 ppm.	$\frac{1}{2}$ gal.	2	7	14	0	9	0.0	64.3	6
	1 "	2	16	75	0	11	0.0	14.7	16
	2 "	2	3	8	0	4	0.0	50.0	2
	3 "	2	11	130	0	20	0.0	15.4	4
	Sub-Total	8	37	227	0	44	0.0	19.4	28
500 ppm.	$\frac{1}{2}$ gal.	2	10	46	0	32	0.0	69.5	10
	1 "	1	4	11	0	2	0.0	18.2	4
	2 "	2	11	82	0	74	0.0	90.2	11
	3 "	2	17	60	0	30	0.0	50.0	17
	Sub-Total	7	42	199	0	138	0.0	69.3	42
750 ppm.	$\frac{1}{2}$ gal.	1	5	104	0	95	0.0	90.0	5
	1 "	1	10	48	0	19	0.0	40.0	10
	2 "	2	22	98	0	49	0.0	50.0	22
	3 "	2	10	32	0	29	0.0	90.6	10
	Sub-Total	6	47	282	0	192	0.0	68.3	47
1000 ppm.	$\frac{1}{2}$ gal.	2	14	270	0	199	0.0	73.7	14
	1 "	2	14	80	0	53	0.0	66.3	14
	2 "	1	5	20	5	20	100.0	100.0	0
	3 "	1	6	105	0	21	0.0	20.0	6
	Sub-Total	6	39	475	5	293	12.8	61.7	34
All Con- centra- tions	$\frac{1}{2}$ gal.	7	36	434	0	335	0.0	77.2	35
	1 "	6	44	214	0	85	0.0	39.7	44
	2 "	7	41	208	5	147	12.2	70.7	35
	3 "	7	44	327	0	100	0.0	30.6	37
	Grand Total	27	165	1,183	5	667	3.0	56.4	151



Text Table 4 - Treatments of Ribes cereum by various Chemical Combinations  
Grand Portage Indian Reservation, Minnesota. Treatments in Summer 1946. Results Observed 1947.

Active Chemical and Concentration	Supplementary Chemical	Dosage (Gallon Applied per Milaore)	No. of Mil- acres	Treated		Killed		Percent Killed		Bushes with Crown Sprouts After Treatment
				Number Bushes	F.L.S.	Number Bushes	F.L.S.	Number Bushes	F.L.S.	
Weed-No-More (40% Butyl Ester, 2,4-D)	None	2	1	1	14	1	14	100.0	100.0	0
	Ammate 4 oz.	2	1	1	4	1	4	100.0	100.0	0
	Ammate 8 oz.	2	2	4	20	3	20	75.0	100.0	1
6 oz. to 10 gal. H2O	Ammate 12 oz.	2	2	5	48	5	48	100.0	100.0	0
	NaClO3 1 oz.	2	1	1	130	1	130	100.0	100.0	0
	NaClO3 3 oz.	2	1	2	60	2	60	100.0	100.0	0
	NaClO3 5 oz.	2	2	6	225	6	225	100.0	100.0	0
Sub-Total		=	10	20	501	19	501	95.0	100.0	1
Dow G. 652 (Methyl Ester 2,4-D) 6 oz. to 10 gal. H2O	None	Covers Ribes	1	1	12	1	12	100.0	100.0	0
	Hort. Oil 1 Vol. (A)	"	2	4	165	3	165	75.0	100.0	1
	Hort. Oil 2 Vol.	"	2	3	65	3	65	100.0	100.0	0
	Hort. Oil 5 Vol	"	2	4	124	4	124	100.0	100.0	0
	Hort. Oil 10 Vol.	"	1	2	55	2	55	100.0	100.0	0
Sub-Total		=	0	14	421	13	421	92.9	100.0	1
Dust, Dow A-652	5% in Pyrax	Covers Ribes	2	4	300	0	150	0.0	50.0	0
Dust, Dow A-626	2 1/2% in Pyrax	"	2	11	450	0	0	0.0	0.0	0
Weed-No-More 1000 ppm.	Plus 4 Hormones (B)	2	1	2	3	2	3	100.0	100.0	0

A. 1 Volume Hort. Oil equals 1 Volume of Dow G-652, etc.

B. 4 Hormones = (1) 2,4,5 Trichlorophenoxyacetic Acid

(2) 4 Chlorophenoxyacetic Acid

(3) Naphoxyacetic Acid

(4) Ethyl Ester of 2,4,5-Trichlorophenoxyacetic Acid.



## Test Table 1

(A)

1. Satisfactory kill of Alnus incana by concentrations of from 500 to 1000 parts per million of the Na salt at dosage of from 1 to 3 gallons of solution per acre can be obtained.
2. Concentrations of less than 500 ppm. of this salt are not entirely lethal.
3. Sufficient dosage is needed to cover all the plants. 1/2 gallon per acre is not always enough.
4. Some sprouting resulted but they were weak sprouts which may survive. From this standpoint, the resultant sprouts are still considerably less than when pulling A. americana bushes by hand.
5. Even a weak concentration of the sodium salt will kill A. americana if the dosage is large enough, but it involves carrying a lot of water. Better to use a stronger concentration and less dosage.

(E)

1. Satisfactory kill of A. americana can be obtained with concentrations of from 250 to 1000 ppm. of Butyl Ester of 2,4-D at dosages of from 1/2 to 3 gallons of water per acre.
2. Most sprouting seemed to occur in using the stronger concentrations.
3. Therefore it would appear that concentrations of 250 ppm. of the Butyl Ester at dosages of 1/2 gallon per acre would be most satisfactory.
4. Where bushes are large and numerous it would be better to increase the dosage to insure complete coverage.
5. Compared to equal parts per million of the sodium salt it appears that the Butyl Ester is more toxic.
6. Also because of the smaller dosage required with the Butyl Ester the expense of application (carrying water) is less than with the Sodium Salt.

## Test Table 2

1. Neither the Sodium Salt nor the Butyl Ester of 2,4-D were effective in killing A. americana.
2. In all cases sprouting from the crown resulted after most of the aerial parts of the plants appeared to have been killed. These resulting sprouts seemed to be quite vigorous.

and sprayed the same solution on the plants in the same manner.

Following several days more growth on treated plants was observed. The water used was 75% for the water was 25% for the water.

1. This resistant process suggested the use of 2,4-D as a spray for killing R. microcarpum.

#### Table 3

1. Neither the Sodium Salt nor the Butyl Ester of 2,4-D proved effective in killing R. microcarpum.
2. Spraying percentages of killing of the aerial parts of the plants occurred, but except in two instances complete kill of live stems was not accomplished.
3. Sprouting from crown of the treated plants was very common.

#### Table 4

1. Good satisfactory kill of Ribes americanum can be obtained with straight 2,4-D formulations there is no apparent need for adding Ammonia or sodium chloride to the solution.
2. Similarly there is no advantage in using Methyl Ester of 2,4-D in the treatment of R. americanum over Butyl Ester, nor is there any point in adding Horticultural Oil, or a combination of all four homologues to the solution.
3. Dusts of 2,4-D formulations, such as Dow A-552 or A-626 were found to be not effective in killing ribes. Dusts require more chemical and produce less killing effect than aqueous solutions.

Similar poor results were also observed on Ribes oxycanthoides treated with various 2,4-D formulations in 1946. Killing of the aerial parts of the plants was unsatisfactory and many sprouts from crown appeared.

Other ribes species treated in 1946 and observed in 1947 were R. cynosbati and R. tripartitum. Neither of these species showed the slightest effect of treatment a year after the various 2,4-D formulations were applied.

Seedlings were also taken on a group of Ribes oxycanthoides bushes which were treated with sodium salt, 70% of 2,4-D at the rate of 2/25 lbs. in July 1945. The immediate result was a killing of all, or most of the stems above the crown. However, by the spring of 1946 abundant and vigorous sprouts from the crown had developed. By 1947 the bushes appeared to be as healthy as ever.



Observations of the above studies indicate that fruit production on treated ribes plants, even though the plants were not entirely killed, was reduced the following year.

In general, on susceptible ribes, spraying with 2,4-D was more effective on small bushes than on larger ones--probably because the smaller bushes were easier to treat.

A few experimental chemical eradication plots were established by Dr. Koney in Wisconsin and Minnesota in 1947. Observations on these plots will be made in 1948.

#### Chemical Plots Established in 1947

Chemical Used	Concentration and Dosage	Co. Mil- Acres	Ribes Species Treated	Number Bushes Treated	P.L.S. Treated
<u>Location: Shawano County, Wisconsin</u>					
Stantox-40 (Triethanolamine Salt, 2,4-D)	250, 500, 750 & 1000ppm. 1/2, 1, 2, & 3 gals. per milacre	32	<u>R. hirtellum</u>	272	1277
Stantox-40 (Triethanolamine Salt 2,4-D) Glycerol 0.636 oz. Water 6 gals.	250, 500, 750 & 1000ppm. 1 & 2 gals. per milacre	8	<u>R. hirtellum</u>	50	290
Stantox-40 plus Glycerol 0.636 oz. Potassium Chloride 0.8004 oz. Water 6 gallons	1000 ppm. 1 & 2 gals. per milacre	6	<u>R. hirtellum</u>	1	130
Dow G-652 (Methyl Ester 2,4-D) 6 oz. in 10 gals. water	1 & 2 gals. per milacre	4	<u>R. hirtellum</u>	8	121
Dow G-652 6 oz. in 10 gals. water plus Glycerol	1 & 2 gals. per milacre	4	<u>R. hirtellum</u>	8	62
Weed-No-More 40 Glycerine Potassium Chloride Water	250, 500, 750 & 1000ppm. 1/2, 1, 2 & 3 gals. per Milacre	32	<u>R. cynosbati</u>	167	2584
Stantox-40 Glycerine Potassium Chloride Water	250, 500, 750 & 1000 ppm. 1/2, 1, 2 & 3 gals. per milacre	32	<u>R. cynosbati</u>	120	2056

Chemical Plots Established in 1947 (Cont'd.)

Chemical Used	Concentration and Dosage	No. Mil- Acres	Ribes Species Treated	Number Bushes Treated	F.L.S. Treated
<u>Location: Shawano County, Wisconsin</u>					
Dow G-652 (Methyl Ester 2,4-D)	22.5% Concent.	2	<u>R. cynosbati</u>	10	600
Stantox-40 plus. 2,4,5 Trichloro- phenoxyacetic acid - 1.488 oz. Anhydrous Sodium Carbonate 1 oz. Ortho Phosphoric Acid 1 oz. Water	1000 ppm. 1 & 2 gals. per mileacre	4	<u>R. hirtellum</u>	14	130
Stantox-40 plus	1000 ppm.	4	<u>R. hirtellum</u>	28	145
2,4,5 Trichlorophenoxyacetic acid - 1.488 oz. Anhydrous Sodium Carbonate 1 oz. Ortho Phosphoric Acid 1 oz. Glycerol 0.636 oz. Water			<u>R. glandulosum</u>	8	26
<u>Location: Grand Portage Indian Reservation, Minnesota</u>					
Stantox-40 (Triethanolamine Salt 2,4-D)	1000 ppm. 1 & 2 gals. per mileacre	8	<u>R. hirtellum</u>	52	97
Water			<u>R. glandulosum</u>	19	25
			<u>R. triste</u>	13	28
Stantox-40 plus Glycerol Water	1000 ppm. 1 & 2 gals. per mileacre	8	<u>R. hirtellum</u>	28	101
			<u>R. glandulosum</u>	49	66
			<u>R. triste</u>	18	31
Stantox-40 plus Glycerol Potassium Chloride Ammonium Phosphate Water	1000 ppm. 1 & 2 gals per mileacre	8	<u>R. hirtellum</u>	44	135
			<u>R. glandulosum</u>	51	74
2-4 Dow (Sodium Salt) Glycerol Potassium Chloride Ammonium Phosphate Water	1000 ppm.	8	<u>R. hirtellum</u>	25	68
			<u>R. glandulosum</u>	22	34
			<u>R. triste</u>	29	50
			<u>R. lacustre</u>	6	20



# Chemical Trials - Wisconsin - 1951

Chemical Used	Concentration		No. of Trees	Type of Tree	Number of Trees	
	and				Treated	
	Location	Concentration			Treated	Untreated
2,4-D (Sodium Salt)	1000 ppm	0	5	Blackberry	1	1
Glycerol			5	Blackberry	1	1
Water			5	Blackberry	27	27

Word received from other sources indicates that there is a possibility that formulations containing 2,4,5-Trichlorophenoxyacetic acid may prove more effective than any of the others yet tried. We have two plots in Shawano County, Wisconsin, on which this material was applied to *R. divellum* and *R. glandulosum* this year. It will be of unusual interest to observe the results next spring.

It has also been suggested that concentrated formulations of 2,4-D applied as an atomized mist will produce more satisfactory results than aqueous solutions. An attempt will be made to obtain one of these mist-making machines for trial in this Region.

## 2,4-D Treatments of Decapitated Ribes

Application of 2,4-D concentrate to decapitated ribes bushes was tried for the first time in this Region this year.

Generally speaking, this treatment was not employed as an alternative to hand-pulling, but supplemental to it. In most cases, only bushes which could not be uprooted because of rocks or other obstructions, were so treated. However, in a few instances, clumps of *R. odoratum* were decapitated and treated rather than uprooted. This species is hard to eliminate from seed and has a propensity for sprouting. It was felt that a considerable saving of time was effected by decapitating the bushes and treating the cut stems rather than trying to uproot them entirely.

A butyl ester (10%) of 2,4-D mixed with an equal volume of water was used.

## Practical Application of 2,4-D Concentrates for Ribes Eradication

A small amount of practical chemical eradication of ribes has been carried on in this Region. Since the 2,4-D formulations tried so far, are only effective in killing the wild black currant, their use is very limited. The most effective use of 2,4-D spray was made at Overgreen City Park, Shawano, Wisconsin. Here, large clumps of *R. americanum*, infested with *R. opacifolium* and escaped *R. sativum* were found in the control zone. Spring lines were laid ahead of the 6-man crew and the three lead men uprooted the *R. opacifolium* and *R. sativum* bushes. Following these three men were two men who sprayed the *R. americanum*. The crew leader followed the sprayers and checked on the work of both groups. Kill was especially good on *R. americanum*. By using this,



spray method the area was covered at one-quarter the cost of hand pulling on initial eradication. R. americanum sprouts profusely when pulled by hand so it is felt that additional savings in cost of eradication are made on the second working when these sprouts would ordinarily have to be pulled. By treating R. americanum with 2,4-D resultant sprouting is done away with.

We believe that this combination spray and hand-pulling method has merit at least until some suitable chemical is found that will kill all species of ribes.

Modifications of the above chemical and hand-pulling eradication method were practiced in other sections of the Region. As the wild black currants, which were sprayed, were intermixed with other species of ribes which had to be pulled by hand, it was impractical to keep separate a record of acreage treated by each. Some savings were also made by using a concentrated solution of 2,4-D applied to decapitated ribes of various species. Such treatment was especially practical on ribes growing in sod. It was found that the concentrate was especially effective in treating clumps of R. odoratum and R. hirtellum, two species which are commonly found growing in sod.

On one area of R. odoratum in Michigan where this decapitation treatment was applied it required only two hours. It is estimated that it would have taken two men all day to uproot the same plants and then they couldn't be sure of getting all of the underground stems which would have sprouted profusely later on.

On the Superior National Forest in Minnesota each man on ribes eradication work was furnished a small 2-ounce bottle of a 20 percent water solution of 2,4-D. Discarded insect repellent bottles were used as dispensers. If the bushes are thoroughly killed, the effectiveness of ribes eradication work has been much increased. It was observed on the Superior National Forest that the crew men were much more conscientious in the application of 2,4-D than they were in the use of the salt-borax mixture. These latter chemicals are much more bulky to handle and there was a decided tendency to over-treat decapitated bushes early in the day in order that less salt-borax would have to be carried.

The treatment of cut stems with concentrated 2,4-D will be further used next year. It is felt that a more rapid and thorough application may be obtained possibly by dabbing the chemical on with a small brush. If the toxic effects are as complete as they seem to be certainly we have found a method of killing ribes, difficult to pull, much better than the use of cumbersome salt-borax.

To date, eradication of ribes by use of 2,4-D formulations is strictly limited to certain species and conditions in this Region. Chemical eradication so far has not progressed to the point where it will displace the more laborious hand eradication methods. However, as experiments are continued and effective solutions are evolved they are being put to practical use wherever possible. For the time being, chemical eradication of ribes is an adjunct to and not a replacement of the old hand eradication methods.



### Costs

Cost figures for the Region during 1947 are shown in Tables 12 to 12C, for Milwaukee alone; by States and appropriations; by States and Activities; and by Activities and Appropriations.

A total of \$524,832.98 was spent during the calendar year, with the following percentage distribution by sources:

State and Private . . . . .	11.9 percent
Bureau 3101 . . . . .	18.9 percent
Bureau 3103 . . . . .	31.1 percent
Forest Service 3104 . . . . .	22.4 percent
Indian Service 3107 and Tribal. . .	15.7 percent
<u>Total</u>	<u>100.0 percent</u>

Approximately 81.2 percent of the grand total was spent on field activities directly concerned with the protection of white pine stands by the removal of ribes. Under the heading "Leadership and Coordination," against which 18.8 percent of the cost is charged, are costs of our permanent skeleton organization, including the Milwaukee Office. State and District Leaders, and to a lesser extent, members of the Milwaukee Regional Office were concerned with all field activities, including ribes eradication, surveys and checking, and making plans for the future. For bookkeeping purposes, however, these costs are shown under "Leadership and Coordination." A more descriptive title would be "State and District Leaders' Activities." A certain minimum number of trained and qualified men are needed to effectively conduct a blister rust control program, be it large or small. These are represented in the skeleton organization. Naturally the proportionate cost of the skeleton organization to the whole is greater when labor funds are small than when they are large. However, the value of field work done by State and District Leaders will be reflected in good plans for future work to get the most in blister rust protection out of every dollar expended.

COOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATE LANDS IN THE  
NORTH CENTRAL REGION, 1947, WORK PROJECT BLR-3-3

Objective of Cooperative Project

The purpose of this cooperative project is to control white pine blister rust on all non-federal lands, both public and private. Non-Federal Public and Private funds are matched by Regular Federal Funds in so far as appropriations are available. These funds are administered cooperatively by the Bureau of Entomology and Plant Quarantine and State agencies concerned and are spent for control on state and private lands.

Cooperative Expenditures in 1947

During 1947, as noted in Text Table 8, \$48,220.88 were spent as Direct Aid by state and private cooperators, including states, counties, municipalities and individuals, on the protection of state and privately-owned white pine against blister rust. Matching these funds the Bureau of Entomology and Plant Quarantine spent a total of \$126,899.61 of 3103 funds. Thus, a total of \$175,120.49 was spent on local control on state and private lands in this Region. This was a decrease of \$38,718.32 under what was spent in 1946 for work on state and private lands. In addition, \$36,117.80 of 3103 funds were spent for protection of white pine on Ownership intermingled with Federal Holdings.

Control Accomplishments, 1947

In Text Table 5 local control accomplished on these Regular-Cooperative funds on state and private lands is shown. It will be noted that under all workings 35,662 acres of white pine were given protection by the removal of 1,323,720 ribes from 121,977 acres of control area at a cost of 9,828 man-days. This represents about the acreage worked in 1945 and half that of 1946, which was the largest acreage worked in any one year since the emergency relief programs stopped. From 1942 to 1947, 814,069 acres of state and private lands have been worked for ribes.

The Bureau of Entomology and Plant Quarantine used its funds primarily for labor. State and Cooperative funds were used in the employment of labor, supervisors, the assignment of state and county men to control work, the employment of owners of white pines, etc. To a greater or lesser degree, owners contributed toward the protection of their own stands in all of the states. Examples of other types of cooperation on the part of states may be given.

In Wisconsin, several counties used County Forest Crop Law funds for the employment of ribes eradication labor of county forests. In Minnesota,



a camp was established, made up of high school boys employed on 3103 funds and state employees for ribes eradication on the Cloquet Valley State Forest. In Iowa, men were employed on State Conservation funds for local control on state lands.

#### Effect of Reduction in Funds on Cooperative Program

As previously mentioned only a relatively small amount of local control was performed on state and private lands after July 1. In Minnesota, two camps of 50 men each had been established, one on the George Washington State Forest, and the other on the Kabetogama State Forest, in late May and early June. For the first time camp facilities were excellent. They consisted of portable buildings for bunkhouses, shower baths, cooking, dining, and latrines. Bottled gas was used for cooking, and a light plant from surplus property furnished light and power. Funds available after July 1 were barely sufficient to do a little control work and to close down the camps and store equipment at our Grand Rapids Warehouse by July 15. Most of the personnel who desired to remain were transferred to the three Forest Service Blister Rust Control camps on the Superior National Forest. Thus, well-trained men were available to continue ribes eradication.

In the other states, employing men on a commuting basis, funds were sufficient only to employ a few crews through August.

While it is impossible to state accurately the reduction in essential work performed chargeable to reduced funds, indications are available from comparisons in work done July to December, 1946 with the corresponding period in 1947. This comparison, on state and private lands only, is shown following:

Period	Acres Worked	Ribes Destroyed	Man- Days	Per Acre	
				Ribes	Man-Days
July to December 1946	207,901	1,684,392	16,970	8.1	0.08
July to December 1947	38,644	507,613	4,647	13.1	0.12
Difference	169,257	1,176,779	12,323	-	-

If the same amount of funds had been available in the summer of 1947 as in 1946, we thus might have been able to remove ribes from approximately 169,000 acres more, or over four times our 1947 accomplishment. With the rust intensifying at an extremely rapid rate and time for protection work very short, this means that large numbers of young white pines on thousands of acres have become infected, which would have remained healthy had the ribes eradication program continued in 1947 at the 1946 rate. Unless adequate funds are made available for timely and needed control, initial work cannot be performed in time, and protection work previously done cannot be maintained.

## Status of Control

In order that a complete record may be available for all work done under the Regular-Cooperative program, Text Table 6 has been devised to show all work since inception in 1942 through 1947.

The status of control on state and private lands in this Region as of December 31, 1947 is shown in Text Table 7 and graphically in Chart 4. This total control problem includes 3,471,595 acres, approximately four-fifths of which is around privately-owned white pine.

Of the total control area, nearly 73 percent has been initially worked, and over 24 percent is on maintenance. Thus, while progress has been made in the protection of state and privately-owned white pine, there remains a great amount of work to be done before all control work is accomplished, and such stands are in a state of maintenance.



Text Table 5. Summary of Local Control on State and Private Lands,  
North Central Region, 1947, Bureau-State Funds, BLR-3.  
(Including 3103 Intermingled Lands Funds)

State	Ownership Class	Acres White Pine			Acres Worked	Ribes Destroyed	Man-Days Used
		Protected		Total			
		Natural	Planted				
		Initial Working					
Illinois	Non-Fed. Public	-	24	24	182	12,975	52
	Private	-	4	4	20	-	2
	Total	-	28	28	202	12,975	54
Indiana	Non-Fed. Public	-	65	65	605	420	5
	Private	3	400	403	3,139	29,446	92
	Total	3	465	468	3,744	29,866	97
Iowa	Non-Fed. Public	-	10	10	75	6,990	132
	Private	35	5	40	248	49,474	351
	Total	35	15	50	323	56,464	383
Ohio	Non-Fed. Public	-	-	-	-	-	-
	Private	-	382	382	3,494	21,252	256
	Total	-	382	382	3,494	21,252	256
Michigan	Non-Fed. Public	1	29	30	170	4,175	55
	Private	2,238	241	2,479	6,423	73,110	496
	Total	2,239	270	2,509	6,593	77,285	551
Minnesota	Non-Fed. Public	808	-	808	1,177	125,839	535
	Private	60	-	60	200	8,397	71
	Total	868	-	868	1,377	134,236	606
Wisconsin	Non-Fed. Public	5,100	240	5,340	24,109	132,316	565
	Private	7,639	113	7,752	25,048	113,884	699
	Total	12,739	353	13,092	49,157	246,200	1,264
Region	Non-Fed. Public	5,909	368	6,277	26,318	282,723	1,601
	Private	9,975	1,145	11,120	38,572	295,563	2,007
Region Total, Initial		15,884	1,513	17,397	64,890	578,286	3,651

(Cont'd)

Text Table 5. (Cont'd) Summary of Local Control on State and Private Lands,  
North Central Region, 1947, Bureau-State Funds, BLR-3.  
(Including 3103 Intermingled Lands Funds)

State	Ownership Class	Acres White Pine			Acres Worked	Ribes Destroyed	Man- Days Used
		Protected		Total			
		Natural	Planted				
<u>Second Working</u>							
Illinois	None	-	-	-	-	-	-
Indiana	Non-Fed. Public	-	22	22	327	10	2
	Private	-	292	292	2,561	28,445	110
	Total	-	314	314	2,888	28,455	112
Iowa	Non-Fed. Public	9	20	29	386	65,280	363
	Private	-	40	40	201	28,050	272
	Total	9	60	69	587	93,330	635
Ohio	Non-Fed. Public	-	2	2	130	-	-
	Private	-	662	662	5,268	38,915	495
	Total	-	664	664	5,398	38,915	495
Michigan	Non-Fed. Public	216	-	216	918	2,874	65
	Private	7,367	351	7,718	21,471	108,803	969
	Total	7,583	351	7,934	22,389	111,677	1,034
Minnesota	Non-Fed. Public	1,308	50	1,358	2,201	19,674	337
	Private	-	-	-	-	-	-
	Total	1,308	50	1,358	2,201	19,674	337
Wisconsin	Non-Fed. Public	27	265	292	1,785	34,250	225
	Private	2,390	82	2,472	8,293	165,784	971
	Total	2,417	347	2,764	10,078	200,034	1,196
Region	Non-Fed. Public	1,560	359	1,919	5,747	122,088	992
	Private	9,757	1,427	11,184	37,794	369,997	2,817
Region Total, Second		11,317	1,786	13,103	43,541	492,085	3,809

(Cont'd)



Text Table 5. (Cont'd) Summary of Local Control on State and Private Lands,  
North Central Region, 1947, Bureau-State Funds, BUE-5,  
(Including 3103 Intermingled Lands Funds)

State	Ownership Class	Acres White Pine Protected		Acres Worked	Pines Destroyed	Land-Deer Used
		Natural	Planted			
		Third and Other Workings				
Illinois	Non-Fed. Public	-	-	-	-	-
	Private	-	8	30	1,347	2
	Total	-	8	30	1,347	2
Indiana	Non-Fed. Public	-	126	460	1,855	20
	Private	-	40	410	4,951	21
	Total	-	166	870	6,781	40
Iowa	Non-Fed. Public	20	-	20	7,701	187
	Private	-	3	16	343	17
	Total	20	3	36	8,044	204
Ohio	Non-Fed. Public	-	-	-	-	-
	Private	-	92	789	8,695	90
	Total	-	92	789	8,695	90
Michigan	Non-Fed. Public	520	3	1,873	20,152	180
	Private	2,651	26	6,958	73,604	603
	Total	3,171	29	8,831	93,756	783
Minnesota	Non-Fed. Public	-	-	-	-	-
	Private	-	-	-	8,000	10
	Total	-	-	-	8,000	10
Wisconsin	Non-Fed. Public	835	469	1,304	106,304	1,187
	Private	366	-	922	20,379	72
	Total	1,201	469	2,226	126,683	1,259
Region	Non-Fed. Public	1,375	598	1,973	136,050	1,947
	Private	3,020	169	3,189	117,299	823
Region Total, White		4,395	767	5,162	253,349	2,368

(Cont'd)

Table 5. (Cont'd) Summary of Local Control on State and Private Lands,  
North Central Region, 1947, Bureau-State Funds, BLR-3.  
(Including 3103 Intermingled Lands Funds)

State	Ownership Class	Acres White Pine			Acres Worked	Ribes Destroyed	Man- Days Used
		Protected		Total			
		Natural	Planted				
All Workings							
Illinois	Non-Fed. Public	-	24	24	182	12,975	52
	Private	-	12	12	50	1,347	4
	Total	-	36	36	232	14,322	56
Indiana	Non-Fed. Public	-	213	213	1,392	2,233	36
	Private	3	732	735	6,110	62,822	223
	Total	3	945	948	7,502	65,055	259
Iowa	Non-Fed. Public	29	30	59	578	80,019	662
	Private	35	48	83	465	77,867	680
	Total	64	78	142	1,043	157,886	1,342
Missouri	Non-Fed. Public	-	2	2	130	-	-
	Private	-	1,136	1,136	9,551	68,862	849
	Total	-	1,138	1,138	9,681	68,862	849
Michigan	Non-Fed. Public	737	32	769	2,761	27,201	309
	Private	12,259	618	12,877	34,852	255,517	2,068
	Total	12,996	650	13,646	37,613	282,718	2,377
Minnesota	Non-Fed. Public	2,116	50	2,166	3,376	145,513	1,172
	Private	60	-	60	200	16,397	81
	Total	2,176	50	2,226	3,576	161,910	1,253
Wisconsin	Non-Fed. Public	5,962	974	6,936	28,065	272,870	1,950
	Private	10,395	195	10,590	34,263	300,047	1,742
	Total	16,357	1,169	17,526	62,328	572,917	3,692
Region	Non-Fed. Public	8,814	1,325	10,139	36,486	510,861	4,181
	Private	22,752	2,741	25,493	85,491	782,859	5,647
Region Total, All Workings		31,596	4,066	35,662	121,977	1,323,720	9,828



Text Table 5A. Summary of Local Control Performed on 3103, Intermingled Lands Funds, 1947, North Central Region

State	Ownership Class	Acres White Pine Protected			Acres Worked	Ribes Destroyed	Man-Days Used
		Natural	Planted	Total			
		Initial	Working				
Michigan	Private	1,175	150	1,325	3,024	49,750	324
Minnesota	Non-Fed. Public	400	-	400	558	72,335	502
Region Total, Initial		1,575	150	1,725	3,582	122,085	826
		Second Working					
Michigan	Forest Service	60	-	60	245	134	5
	Private	3,429	185	3,614	10,028	68,223	534
	Total	3,489	185	3,674	10,273	68,357	539
Wisconsin	Forest Service	1,849	1	1,850	3,211	103,049	1,054
Region	Forest Service	1,909	1	1,910	3,486	103,183	1,059
	Private	3,429	185	3,614	10,028	68,223	534
Region Total, Second		5,338	186	5,524	13,514	171,406	1,593
		Third and Other Workings					
Michigan	Forest Service	60	-	60	120	1,452	14
	Private	817	16	833	2,420	41,017	165
Region Total, Third		877	16	893	2,540	42,469	179
		All Workings					
Michigan	Forest Service	120	-	120	365	1,586	19
	Private	5,421	351	5,772	15,482	158,998	1,025
	Total	5,541	351	5,892	15,847	160,584	1,044
Minnesota	Non-Fed. Public	400	-	400	558	72,335	502
Wisconsin	Forest Service	1,849	1	1,850	3,211	103,049	1,054
Region	Forest Service	1,969	1	1,970	3,606	104,635	1,073
	Non-Fed. Public	400	-	400	558	72,335	502
	Private	5,421	351	5,772	15,482	158,998	1,025
Region Total, All Workings		7,790	352	8,142	19,646	335,968	2,600

Note: Work done on 3103 Intermingled Lands Funds on State and Private Lands included in Text Table 5; and on Forest Service Lands in Text Table 9.

Text Table 6. Cumulative Summary of Local Control on State and Private Lands, North Central Region, 1942-1947, Bureau-State Funds, BLR-3

State	Ownership Class	Acres White Pine Protected			Acres Worked	Ribes Destroyed	Man-Days Used
		Natural	Planted	Total			
		<u>Initial Working</u>					
Illinois	Non-Fed. Public	-	68	68	922	16,435	97
	Private	-	343	343	6,188	129,145	412
	Total	-	411	411	7,110	145,580	509
Indiana	Non-Fed. Public	-	204	204	2,139	2,622	28
	Private	3	2,488	2,491	17,323	76,192	363
	Total	3	2,692	2,695	19,462	78,814	391
Iowa	Non-Fed. Public	60	121	181	1,612	172,194	1,417
	Private	88	113	201	2,055	155,259	1,583
	Total	148	234	382	3,667	327,453	3,000
Ohio	Non-Fed. Public	-	1,078	1,078	3,742	19,510	507
	Private	127	2,141	2,268	17,305	53,745	560
	Total	127	3,219	3,346	21,047	73,255	1,067
Michigan	Non-Fed. Public	2,789	2,417	5,206	20,624	156,785	768
	Private	16,881	4,211	21,092	82,943	835,692	5,056
	Total	19,670	6,628	26,298	103,567	992,477	5,824
Minnesota	Non-Fed. Public	2,979	228	3,207	5,587	477,456	5,446
	Private	60	2	62	233	10,397	75
	Total	3,039	230	3,269	5,820	487,853	5,521
Wisconsin	Non-Fed. Public	32,443	4,742	37,185	113,462	493,419	3,430
	Private	47,236	1,609	48,845	129,651	694,730	4,041
	Total	79,679	6,351	86,030	243,113	1,188,149	7,471
Region	Non-Fed. Public	38,271	8,858	47,129	148,088	1,338,421	11,693
	Private	64,395	10,907	75,302	255,698	1,955,160	12,090
Region Total, Initial		102,666	19,765	122,431	403,786	3,293,581	23,783

(Cont'd)



Text Table 6. (Cont'd) Cumulative Summary of Local Control on State and Private Lands, North Central Region, 1942-1947, Bureau-State Funds, BLR-3

State	Ownership Class	Acres White Pine Protected			Acres Worked	Ribes Destroyed	Man-Days Used
		Natural	Planted	Total			
		Second Working					
Illinois	Non-Fed. Public	102	847	949	3,719	140,235	927
	Private	28	215	243	1,500	22,943	241
	Total	130	1,062	1,192	5,219	163,178	1,168
Indiana	Non-Fed. Public	-	922	922	5,000	12,465	162
	Private	87	822	909	8,175	30,008	136
	Total	87	1,744	1,831	13,175	42,473	298
Iowa	Non-Fed. Public	39	46	85	800	159,697	915
	Private	142	255	397	3,327	239,742	2,051
	Total	181	301	482	4,127	399,439	2,966
Ohio	Non-Fed. Public	-	1,272	1,272	5,930	9,042	220
	Private	290	769	1,059	6,836	42,159	545
	Total	290	2,041	2,331	12,766	51,201	765
Michigan	Non-Fed. Public	12,425	4,034	16,459	34,018	273,956	1,719
	Private	32,590	2,444	35,034	109,333	1,007,189	7,357
	Total	45,015	6,478	51,493	143,351	1,281,145	9,076
Minnesota	Non-Fed. Public	5,512	295	5,805	8,154	211,503	2,453
	Private	3	2	5	57	3,835	36
	Total	5,515	297	5,810	8,211	215,338	2,489
Wisconsin	Non-Fed. Public	15,890	5,317	21,207	46,629	406,425	3,873
	Private	39,058	923	39,981	110,972	924,400	9,361
	Total	54,948	6,240	61,188	157,601	1,330,825	13,234
Region	Non-Fed. Public	33,968	12,731	46,699	104,250	1,213,323	10,274
	Private	72,198	5,430	77,628	240,200	2,270,276	19,727
Region Total, Second		106,166	18,161	124,327	344,450	3,483,599	30,001

(Cont'd)

Text Table 6. (Cont'd) Cumulative Summary of Local Control on State and Private Lands, North Central Region, 1942-1947, Bureau-State Funds, BLR-3

State	Ownership Class	Acres White Pine Protected			Acres Worked	Ribes Destroyed	Man-Days Used
		Natural	Planted	Total			
		Third and Other Workings					
Illinois	Non-Fed. Public	90	254	344	2,376	100,493	695
	Private	5	577	582	2,502	50,764	588
	Total	95	831	926	4,878	151,257	1,283
Indiana	Non-Fed. Public	61	126	187	790	2,806	36
	Private	102	100	202	2,156	8,929	44
	Total	163	226	389	2,946	11,735	80
Iowa	Non-Fed. Public	261	-	261	850	87,166	861
	Private	27	3	30	358	22,921	207
	Total	288	3	291	1,208	110,087	1,068
Ohio	Non-Fed. Public	420	769	1,189	2,428	3,684	84
	Private	854	111	965	4,720	15,774	216
	Total	1,274	880	2,154	7,148	19,458	300
Michigan	Non-Fed. Public	2,149	3,269	5,418	10,869	58,350	579
	Private	7,752	273	8,025	24,471	266,797	2,424
	Total	9,901	3,542	13,443	35,340	325,147	3,003
Minnesota	Non-Fed. Public	2,491	179	2,670	3,179	86,294	880
	Private	8	175	183	494	34,164	257
	Total	2,499	354	2,853	3,673	120,458	1,137
Wisconsin	Non-Fed. Public	904	557	1,461	3,061	113,380	1,250
	Private	1,868	22	1,890	7,579	86,463	728
	Total	2,772	579	3,351	10,640	199,843	1,978
Region	Non-Fed. Public	6,376	5,154	11,530	23,553	452,173	4,385
	Private	10,616	1,261	11,877	42,280	485,812	4,464
Region Total, Third		16,992	6,415	23,407	65,833	937,985	8,849

(Cont'd)



Text Table 6. (Cont'd) Cumulative Summary of Local Control on State and Private Lands, North Central Region, 1942-1947, Bureau-State Funds, BLR-3

State	Ownership Class	Acres White Pine Protected			Acres Worked	Ribes Destroyed	Man- Days Used
		Natural	Planted	Total			
		All Workings					
Illinois	Non-Fed. Public	192	1,169	1,361	7,017	257,163	1,719
	Private	33	1,135	1,168	10,190	202,852	1,241
	Total	225	2,304	2,529	17,207	460,015	2,960
Indiana	Non-Fed. Public	61	1,252	1,313	7,929	17,893	226
	Private	192	3,410	3,602	27,654	115,129	543
	Total	253	4,662	4,915	35,583	133,022	769
Iowa	Non-Fed. Public	360	167	527	3,262	419,057	3,193
	Private	257	371	628	5,740	417,922	3,841
	Total	617	538	1,155	9,002	836,979	7,034
Ohio	Non-Fed. Public	420	3,119	3,539	12,100	32,236	811
	Private	1,271	3,021	4,292	28,861	111,678	1,321
	Total	1,691	6,140	7,831	40,961	143,914	2,132
Michigan	Non-Fed. Public	17,363	9,720	27,083	65,511	489,091	3,066
	Private	57,223	6,928	64,151	216,747	2,109,678	14,837
	Total	74,586	16,648	91,234	282,258	2,598,769	17,903
Minnesota	Non-Fed. Public	10,982	700	11,682	16,920	775,253	8,784
	Private	71	179	250	784	48,396	368
	Total	11,053	879	11,932	17,704	823,649	9,152
Wisconsin	Non-Fed. Public	49,237	10,616	59,853	163,152	1,013,224	8,553
	Private	88,162	2,554	90,716	248,202	1,705,593	14,130
	Total	137,399	13,170	150,569	411,354	2,718,817	22,683
Region	Non-Fed. Public	78,615	26,743	105,358	275,891	3,003,917	26,352
	Private	147,209	17,598	164,807	538,178	4,711,248	36,281
Region Total, All Workings		225,824	44,341	270,165	814,069	7,715,165	62,633

Note: In Text Table 6, work done on State and Private Lands, both by Bureau-State funds, and 3103 Intermingled is shown, for the period 1942-1947 only, or since the Lee Act became effective. For total work done on State and Private Lands, 1917 to 1947, see Table 8.



Table 7. Status of Control on Non-Federal Public and Private Lands, by States,  
North Central Region, December 31, 1947. Net Acres

Ownership Class	Total Control Problem, Acres			Initially Worked, Acres			Not Initially Worked, Acres			On Maintenance Acres		
	White			White Pine			White Control			White Control		
	Natural	Planted	Total	Natural	Planted	Total	Pine	Area	Area	Pine	Area	Area
Illinois												
Non-Fed. Public	197	914	1,111	192	912	1,104		6,212	7	114	543	1,168
Private	34	778	812	34	722	756		4,945	56	2,115	58	1,149
Total	231	1,692	1,923	226	1,634	1,860		11,157	63	2,229	601	2,392
Indiana												
Non-Fed. Public (a)	99	2,388	2,487	99	2,335	2,434		16,573	53	1,346	1,493	10,656
Private	228	5,834	6,062	227	4,448	4,675		60,856	1,387	109,642	3,704	41,020
Total	327	8,222	8,549	326	6,783	7,109		77,429	1,440	110,988	5,197	51,676
Iowa												
Non-Fed. Public	347	206	553	347	205	552		3,348	1	20	11	30
Private	365	4,682	5,247	307	2,460	2,767		30,205	2,480	15,928	1,582	18,740
Total	712	5,088	5,800	654	2,665	3,319		33,553	2,481	15,948	1,593	19,070
Ohio												
Non-Fed. Public (b)	798	5,679	6,477	796	4,077	4,873		40,305	1,604	15,569	1,229	12,812
Private	2,286	10,947	13,233	2,174	6,658	8,832		139,636	4,401	270,848	2,789	60,059
Total	3,084	16,626	19,710	2,970	10,735	13,705		179,941	6,005	286,417	4,018	72,871
Michigan												
Non-Fed. Public	99,158	31,448	130,606	94,741	30,217	124,958		293,364	5,648	20,960	51,683	122,611
Private	201,365	13,755	215,120	175,274	11,496	186,770		637,047	28,350	106,542	48,643	179,595
Total	300,523	45,203	345,726	270,015	41,713	311,728		930,411	33,998	127,502	100,326	302,206
Minnesota												
Non-Fed. Public	46,753	14,720	61,473	32,928	5,971	38,899		76,262	22,574	47,536	12,310	23,394
Private	87,623	390	88,013	67,122	388	67,510		207,067	20,503	69,422	15,080	36,072
Total	134,376	15,110	149,486	100,050	6,359	106,409		283,329	43,077	116,958	27,390	59,466

(Cont'd)



Text Table 7. (Cont'd) Status of Control on Non-Federal Public and Private Lands, by States,  
North Central Region, December 31, 1947. Net Acres

Ownership Class	Total Control Problem, Acres			Initially Worked, Acres			Not Initially Worked, Acres		On Maintenance Acres			
	White		Control Area	White Pine		Control Area	White Pine		White Pine			
	Natural	Planted		Natural	Planted		Pine	Area	Pine	Area		
	Wisconsin											
Non-Fed. Public	76,671	16,023	92,694	261,985	73,596	15,584	89,180	249,700	3,514	12,285	37,897	106,851
Private	260,457	7,521	267,978	1,033,748	202,062	6,311	208,373	757,900	59,605	275,848	65,339	221,887
Total	337,128	23,544	360,672	1,295,733	275,658	21,895	297,553	1,007,600	63,119	288,133	103,238	328,738
Region												
Non-Fed. Public	224,023	71,378	295,401	783,594	202,699	59,301	262,000	685,764	33,401	97,830	105,166	277,309
Private	552,358	44,107	596,465	2,688,001	447,200	32,483	479,683	1,837,656	116,782	850,345	137,195	558,309
Region Total	776,381	115,485	891,866	3,472,595	649,899	91,784	741,683	2,523,420	150,183	948,175	242,361	835,617
Includes U. S.												
Army Lands as follows:												
(a)	-	42	42	354	-	37	37	202	5	152	37	202
(b)	-	156	156	1,675	-	136	136	1,237	20	438	51	475

Text Table 8. Costs of Cooperative Control Program, BLR-3,  
North Central Region, 1941 to 1947

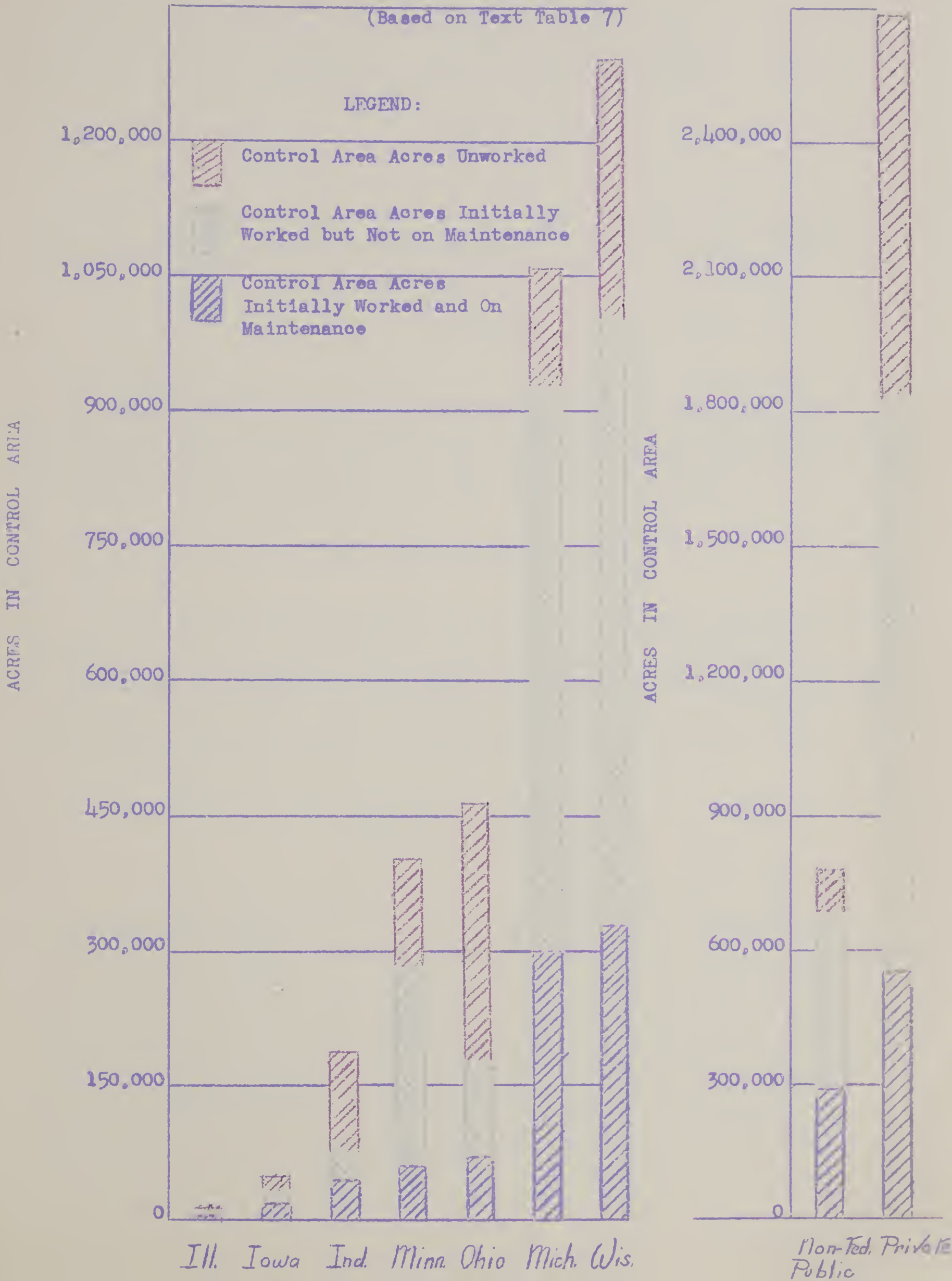
State	Period of Time	State and Private Cooperation Direct Aid	Bureau 3103 State and Private	Bureau 3103 Intermingled Lands	Total Expenditures
Illinois	1941-1946	\$23,323.34	\$18,164.34	-	\$41,487.68
	1947	4,095.24	3,721.71	-	7,816.95
	Total	27,418.58	21,886.05	-	49,304.63
Indiana	1941-1946	1,680.60	3,244.50	-	4,925.10
	1947	414.58	7,037.66	-	7,452.24
	Total	2,095.18	10,282.16	-	12,377.34
Iowa	1941-1946	12,915.34	32,894.10	-	45,809.44
	1947	2,982.98	10,461.81	-	13,444.79
	Total	15,898.32	43,355.91	-	59,254.23
Missouri	1941-1946	3,953.82	12,443.37	-	16,397.19
	1947	134.58	15,729.67	-	15,864.25
	Total	4,088.40	28,173.04	-	32,261.44
Michigan	1941-1946	43,573.59	82,870.06	\$9,666.93	136,110.58
	1947	9,401.90	25,100.71	7,993.41	42,496.02
	Total	52,975.49	107,970.77	17,660.34	178,606.60
Minnesota	1941-1946	31,932.96	73,078.00	10,257.83	115,268.79
	1947	9,474.26	36,306.44	22,232.34	68,013.04
	Total	41,407.22	109,384.44	32,490.17	183,281.83
Wisconsin	1941-1946	57,198.87	86,835.36	9,907.54	154,241.77
	1947	21,717.34	28,541.61	5,892.05	56,151.00
	Total	79,216.21	115,376.97	15,799.59	210,392.77
Region	1941-1946	174,878.52	309,529.73	29,832.30	514,240.55
	1947	48,220.88	126,899.61	36,117.80	211,238.29
Region Total		223,099.40	436,429.34	65,950.10	725,478.84

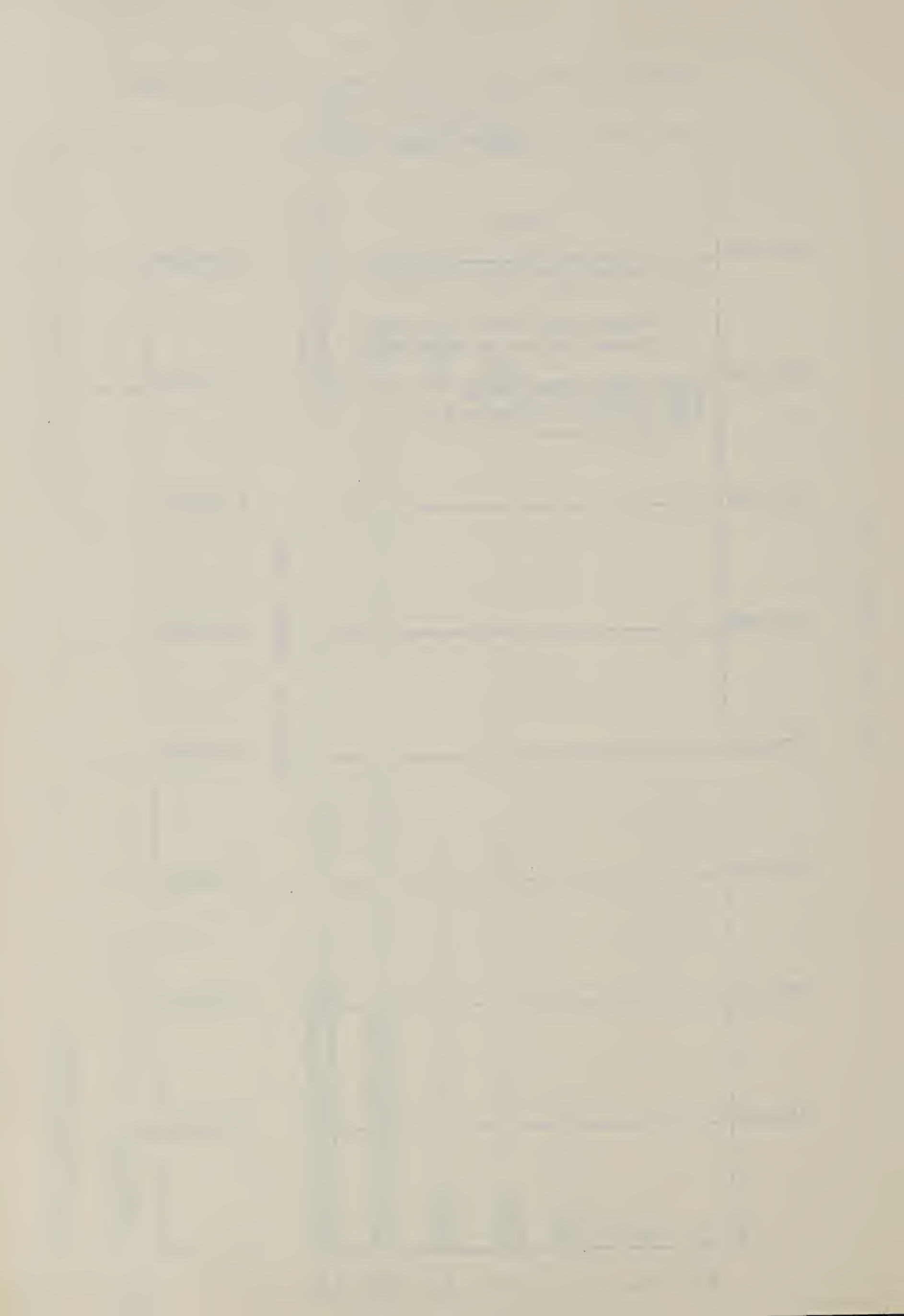


# CHART 4

## STATUS OF CONTROL FOR STATE AND PRIVATE LANDS, BY STATES NORTH CENTRAL REGION To December 31, 1947

(Based on Text Table 7)







## BLISTER RUST CONTROL ON NATIONAL FORESTS,

### NORTH CENTRAL REGION, 1947, PROJECT BLR-4

#### Foreword

No outline forest maps accompany this report. There were insufficient changes in status in recent years to justify the preparation of new maps. The reader is referred to maps with the 1943 Report.

#### Objective

The objective of the Blister Rust Control Program on National Forests is to protect against blister rust all valuable white pine stands under Forest Service ownership. This involves initial and subsequent ribes eradication within infecting distances of white pine stands in order to bring such stands through to commercial maturity free from blister rust damage.

#### Memorandum of Understanding

Control work on National Forest lands is performed through a written Memorandum of Understanding between the Forest Service and the Bureau of Entomology and Plant Quarantine. The Forest Service is responsible for selection of pine areas to be protected, employment of labor and supervision, and operations of camps. The Bureau is responsible for the preparing of work plans and maps, keeping records, making reports, training of labor and supervision, and checking the adequacy of the control work.

#### Protective Zone Widths

Blister rust control involves the removal of ribes bushes within a pine stand and for a sufficient distance around it to assure protection. Formerly, this protection zone width was 900 feet. Within recent years this width has been reduced materially depending on forest types concerned. In live swamps of alder, cedar, etc. the zone width has been reduced to approximately 50 feet, or one crew width. Studies have failed to show serious damage to pines from swamp ribes, except for short distances. Ribes eradication in swamps is expensive. Due to perpetually moist conditions, and ability of ribes to regenerate by layering, it is almost impossible permanently to eradicate ribes in swamps. For these reasons, it is wiser to accept a small loss among pines bordering the swamps in preference to the relatively high cost of swamp ribes removal. The eradication of ribes in swamp borders removes those most dangerous to the pines.



This zone width in dense woodland has been reduced to approximately 300 feet and in open woodland to 600 feet. The screening effect of forest growth is such a deterrent to the movement of pine infecting spores produced on ribes that under most conditions little pine infection results from ribes beyond such protection zones. In the open the full 900 feet zone is maintained.

### Rust Conditions

#### General Status for 1947

The year 1947 was characterized by a late, cold, wet spring, a hot humid summer, and a fairly dry fall. While these conditions were not especially conducive to abnormal rust spread, there was at least a normal amount of it. Blister rust on either pine or ribes is present in greater or lesser degree on all of the forests in Michigan, Wisconsin and Minnesota. It is less abundant on the Huron and Manistee Forests in Lower Michigan. In the other six forests, it is well established throughout the white pine belt and is intensifying rapidly in unprotected stands. The same conditions favorable to rust development were equally favorable to germination and growth of natural white pine seedlings. Unfortunately, however, in unprotected stands the present and potential loss of young white pines is far greater than the rate of establishment of new pines. This is particularly true on the Superior National Forest.

#### Significance of Present Rust Conditions

There are three recognized periods in the development of the rust; the introductory, intensification and climax. The introductory period of the rust has prevailed on the pines of the several National Forests of the Lake States for the past several years. It is going into the period of intensification on some forests where it has not been possible to maintain the required ribes eradication schedule. On the Superior it has already reached the climax stage in several unprotected areas. For a more detailed discussion of the three periods see the 1946 Regional Report.

### General Status of Control

The status of control on the various National Forests of the Region is shown in Text Table 11 and on the accompanying map.

Local control work is about up to schedule on all Forests except the Superior. To date 66.4 per cent of the pine has been given initial protection and 29.5 per cent is on maintenance.

Local control work performed in 1947 is shown in Text Table 9 and is summarised below:



Local Control Performed on National Forests, North Central Region, 1947

Eradication	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used
Initial	4,966	12,476	355,102	2,838
Reeradication	8,648	17,888	375,631	4,446
Total	13,614	30,364	730,733	7,284

It was much easier to secure men who were well qualified for blister rust control work during the past season than at any time since World War II. As a result, a better class of labor was obtained and in most instances both the quality of work and quantity of output per man-day improved. Also, because of the curtailment of funds for work on State and Private lands after July 1, the Bureau technical men had more time to devote toward the direction and checking of work on National Forests. Labor was largely paid from Forest Service Regular funds, (3104). Local men, and in a few instances, women were employed where they were available. High school boys were also recruited when there were not enough men. The boys were of an older age class than those used in recent past years and were better workers. Crews were made up of nearly all boys in the camps operated on the Superior Forest.

In Text Table 10 are shown the results of systematic checking after the 1947 ribes eradication. For the entire work an average of 2.6 bushes with 4.8 feet of live-stem per acre was found. This is evidence of very good work, since the allowable maximum after eradication is 25 F.L.S. per acre. Approximately 98.9 percent of the 26,624 acres worked and checked, or all but 286 acres, showed less than 25 F.L.S. per acre after working.

A distinction should be made between "Gross" and "Net" acres worked. In Text Table 11, there are "Net" initially worked 271,598 acres. In Text Table 12 there are shown 308,881 "Gross" acres initially worked. "Gross" acres worked represent the yearly accumulation of acres worked. "Net" acres represent our best present knowledge of existing acreage retained in the control problem. Differences between "Gross" and "Net" represent acreages thrown out because pine values no longer are sufficient, due to logging, fire, grazing, etc.

Ribes Abundance by Forests

The abundance of ribes is not only a principal factor influencing the rapidity with which the rust intensifies, but it also directly affects the cost of protection. Since a considerable amount of control work has already been performed in most of the National Forests in this Region, the average number of ribes destroyed per acre for all workings to date may be of value. This information, taken from Text Table 12 is shown graphically in Chart 6. The number of ribes per acre on initial working varies from 2.3 on the Manistee National Forest, Michigan, to 148.6 on the Ottawa National Forest, Michigan. In general, listed in order of increasing ribes abundance on National Forests came those in Lower Michigan, then Upper Michigan, (except the Ottawa National Forest) Wisconsin and Minnesota.



## Status of Control by Forests

NOTE: See 1943 Report for outline maps of each forest.

### Manistee National Forest - Michigan

Of all the National Forests in the Region, the Manistee is the most suitable for white pine planting. It now contains 19,959 acres of planted white pine quite generally distributed over the forest. This is about 40 percent of the total white pine planted on National Forests in the Region and is more than the combined total white pine planting on any other three of them. All of the white pine, natural and planted, on the Manistee has now been initially worked, and over 91 percent of it is on a maintenance basis. Very fortunately, in the extensive oak forests under which white pine grows so well on the Manistee ribes are generally scarce except in certain moist spots. In 1947, initial working of 400 acres, second working of 2,129 acres, and third working of 2,573 acres was done, and 5,769 ribes were removed at a cost of 80 man-days.

The situation with respect to spread of blister rust on the forest remained practically unchanged in 1947. Rust on ribes has been reported as quite generally distributed. Light pine infection occurs in only a few widely scattered places on the Forest and there is no appreciable damage to pine anywhere.

Only a small amount of work is recommended for 1948. No initial work is needed except around any white pine plantation which may be established in 1948. Depending on results of post check, some rework may be recommended for 1948. Through an excellent working arrangement between the Forest Supervisor and the Blister Rust Control District Leader, the latter examines prospective white pine planting sites prior to planting in order to encourage the planting of white pine on sites where ribes are not abundant.

### Huron National Forest - Michigan

The present control problem consists of 262 acres of natural pine, 1,001 acres of planted pine, within a total control area of 5,038 acres. All but 15 acres of this has been initially worked, and 61.6 percent of it is on maintenance. In 1947 only one area was worked; second working, involving the removal of 918 ribes from 70 acres at a cost of 6 man-days. This small amount of work was done by a Bureau crew paid on 3104 funds.

Rust on ribes was generally distributed in 1947. There was no significant change in pine infection; it is generally light and occurs in only a few widely separated areas.

Very little control work is recommended for 1948, other than the checking of areas to be planted to white pine. The same excellent working agreement described for the Manistee is in effect on the Huron.



### Marquette National Forest - Michigan

About equal acreage of planted and natural white pine make up the 10,787 acres listed for protection with a control area of 25,155 acres. There remain approximately 155 acres of natural pine with a control area of 685 acres to be initially worked. About 39 percent of the pine acreage, chiefly in the northern third of the forest, is on a maintenance basis.

As noted in Text Table 9, both initial and rework were performed in 1947. Initial work was done on 520 acres and second working on 760 acres. From the total 1,280 acres worked, 9,417 ribes were destroyed at a cost of 204 man-days.

Rust on ribes is generally prevalent on the forest. Pine infection has been found at three localities: south of Moran, northwest of Rudyard, and southwest of Raco. While additional pine infections were found in 1947, there was no increase in the known range of the rust on the forest.

Work remaining to be done involves the initial protection of 155 acres of white pine requiring the removal of ribes from 685 acres of control area, and rework where needed.

### Hiawatha National Forest - Michigan

Initial and rework was done on the forest this year. On initial work a total of 15,628 ribes were removed from 4,495 acres of control area to protect 1,477 acres of pine at a cost of 125 man-days. Second working involved the removal of 2,587 ribes from 620 acres to protect 200 acres of pine at a cost of 31 man-days. Chocking showed ribes at the rate of 1.8 bushes with 2.4 F.L.S. per acre after eradication. This is very good.

The status of control in 1947 changed somewhat over previous years in that pine acreage has increased due to an increase in natural reproduction. The control problem now involves the protection of 11,271 acres of pine of which 2,596 acres is planted. All of the planted pine and all but 500 acres of natural pine have been initially protected. About one third of the pine is on maintenance. Both ribes and pine infection are quite generally distributed over the forest. Some intensification of the rust on pines was noted on areas where pine infection had been found previously.

### Ottawa National Forest - Michigan

This forest contains, chiefly in the eastern half, the largest amount of white pine, 11,575 acres, of the three National Forests in Upper Michigan. This acreage is made up of 7,539 acres of natural, and 4,036 acres of planted white pine. As of December 31, 1947, initial protection had been afforded 7,237 acres of natural, and 3,865 acres of planted white pine, leaving 473 acres of white pine still in need of initial protection. There are 3,421 acres of pine, or 29.5 percent, on maintenance.

Initial ribes eradication and rework were performed on the Iron River, Kanton, Ontonagon and Watersmeet Ranger Districts. Field work was under Alfred J. Verville, a supervisor of several years successful Blister Rust Control experience.



In most cases eradication work started as soon as the spring planting was finished. This somewhat lowered the efficiency of the work performed as it caused the loss of the early season optimum conditions when ribes are the only plants in the woods that are in leaf. Scarcity of labor made it necessary to wait until the planting crews had finished planting and could be transferred to ribes eradication.

The following work was done on the Ottawa National Forest in 1947 to protect initially 775 acres of white pine; 187,881 ribes were removed from 1,600 acres of control area at a cost of 819 man-days. In second working to protect 700 acres of white pine, 97,450 ribes were removed from 1,325 acres of control area at a cost of 455 man-days. In third working 533 acres of pine were protected by the removal of 4,693 ribes from 1,210 acres of control area at a cost of 233 man-days. The systematic check after eradication showed ribes remaining at the rate of 3.9 bushes and 4.8 F.L.S. per acre. All the 4,135 acres checked showed satisfactory work.

Blister rust is abundant, widespread, and intensifying rapidly on the forest. It has reached the damage stage on several unprotected white pine areas. Rust can be found on both hosts practically wherever pines and ribes are in association. Factors responsible for this condition are the prevalence of ribes, the abundance of white pine, particularly young trees, and favorable climatic conditions. This last factor equally encourages white pine reproduction. However, in unprotected stands, the rust is killing young white pine trees faster than they can be replaced by natural reproduction. The rust is not doing damage in protected stands. From Text Table 12 and Chart 6 it will be noted that the average of 148.6 ribes bushes initially destroyed per acre on the Ottawa is the highest rate of all the National Forests in the Region.

Work planned for 1948 should be on a sufficient scale, to maintain protection by rework on the areas of young white pine initially worked several years ago, and to perform the small amount of initial work remaining to be done. Lists have been prepared by Ranger Districts giving in order of need the areas of white pine. These lists will insure the best use of labor available in furnishing blister rust protection. It is estimated that 90 man-days will be needed for initial eradication and 420 man-days for rework on the Ottawa in 1948.

#### Nicolet National Forest - Wisconsin

The general control problem on the Nicolet in 1947 was slightly larger in 1947 than was shown in the 1946 report. This is due to an increase in natural reproduction which has become established in several areas on the lighter soils, particularly in the Lakewood District. In contrast there has been a small decrease in the acreage of planted pine and there will probably be a further loss unless additional plantations are established. Encroachment of brush and hardwoods, deer browsing, and blister rust damage have all contributed to plantation failures. This occurs particularly in the northern part of the forest. The most successful white pine plantations are found on the Lakewood District.



The control problem in 1947 consisted of 5,990 acres of natural white pine and 6,366 acres of planted pine, making a total of 12,356 acres considered worth protection from blister rust. The total control area involved 24,159 acres.

Net acreages protected initially amount to 11,811 acres white pine or 96 percent. All planted acreage retained in the control problem has been given initial protection. The acreage not initially worked, 475 acres of natural white pine and 815 acres of control area, is recommended for protection in the spring of 1948.

Second eradication to date totals 9,731 acres, or 79 percent of the white pine in the control problem. Virtually all the planted acreage has been worked at least twice. Only 894 acres of white pine or 7 percent has been worked three times.

The area on maintenance, 4,202 acres, is 34 percent of the total pine acreage. Only 19 percent of the planted pine area is on maintenance whereas 51 percent of the natural pine is in this status.

In addition, nearly all of the remaining natural acreage can be placed on maintenance after a second working, while most of the plantations will require three and even four workings before they can be placed in this status.

All control work scheduled for 1947 was completed with the exception of one small area on the Lakewood District. Crew personnel consisted of local men who were employed on tree planting earlier in the spring. On the Lakewood and Eagle River Districts, the foreman and some of the crew men had previous ribes eradication experience and this was reflected in their very satisfactory work. On the Argonne District only teenage boys were available and they had to be transported considerable distances. Neither the foreman nor any of the boys had any previous blister rust control experience and consequently their work was not as good as that performed in the other two districts.

In 1947 a total of 651 man-days was used to eradicate 42,219 ribes from 2,388 acres of control area. This included initial, second and third workings.

Checking after eradication showed average per acre figures of 3.05 bushes and 8.1 F.L.B. of ribes left.

Losses from blister rust continue to mount each year. On some unprotected areas, infection approaches 100 percent. Even pole stands show a high percent of cankered branches. Light infection is also present in most worked areas, however, timely ribes eradication has prevented severe damage. Losses are most serious in plantations as they are not being replaced by new plantings or natural regeneration of any other valuable tree species. In general, damage is more severe in the northern part of the forest where several factors combine to create favorable conditions for the spread of the rust.



According to the 1946 report, no control work was recommended for the fiscal year 1948. Since then, however, a few areas have been mapped which are becoming sufficiently well stocked with white pine to warrant initial protection. In addition one area remains from last years work plan and one plantation is in need of early rework. The complete work plan recommended for the spring of 1948 involves 695 acres of pine, 1,215 acres to work with an estimated expenditure of 355 man-days.

#### Chequamegon National Forest - Wisconsin

The Chequamegon contains a large amount of natural white pine mostly concentrated in the Washburn District where it occupies extensive contiguous areas. Most of the 16,763 acres of white pine listed for protection has been initially worked with only 399 acres still needing initial protection. Approximately 39 percent or 6,520 acres of white pine are on maintenance.

Less local control work was performed on the Chequamegon in 1947 than in 1946 due primarily to three reasons; less funds available, a late start in the spring and a heavier concentration of ribes in areas worked this year than last.

As noted in Text Table 9, both initial and rework was performed on the forest in 1947. Regular Forest Service (3104) funds were used for the employment of labor on the Park Falls and Washburn Ranger Districts and in addition Bureau Intermingled Lands funds (3103) were used on the Washburn District. For the forest as a whole, initial work resulted in the removal of 12,273 ribes from 842 acres of control area to protect 430 acres of pine at a cost of 196 man-days. In second working 2,919 acres of white pine were protected by destroying 123,490 ribes on 4,616 acres of control area at a cost of 1,447 man-days.

Labor in 1947 was more plentiful and good experienced men were available from the ranks of woods workers, veterans and some high school boys.

Checking after eradication showed average per acre figures of 2.0 bushes and 4.2 F.L.S. of ribes left. All of the 5,458 acres worked and checked showed less than 15 F.L.S. per acre. This creditable showing reflects the good quality of labor and supervision that was available.

Blister rust is generally distributed on ribes and on both planted and natural white pine on the forest. Observations indicate that on the forest as a whole initial control has checked the spread of the rust, but that rework is essential on several areas to maintain the protected status.

Plans have been submitted for the Hayward, Glidden and Washburn Districts for work necessary in 1948 to reduce losses to a minimum and to place white pine stands on maintenance as quickly as possible. These plans call for working 5,753 acres at an estimated cost of 2,544 man-days.

#### Superior National Forest - Minnesota

The Superior National Forest contains by far the largest amount of white pine of any of the forests in this Region. Listed in the control area as worth protecting are 82,542 acres of white pine involving 131,790 acres



of control area. This pine has practically all been tapped. It is conservatively estimated that in the inaccessible portions of the forest there exist an additional 100,000 acres of good white pine not yet tapped. During recent wet years white pine has seeded in and has become established at a rapid rate. Unfortunately, the same favorable climatic conditions and a great abundance of ribes closely associated with pines have resulted in an alarming intensification of the rust and the probable killing off of young white pine trees by blister rust in unprotected stands at a faster rate than their increase through natural reproduction.

The problem of furnishing protection to white pine stands on the Superior is an enormous one. To the end of 1947, 25,214 acres of pines had been initially protected. On the basis of mapped pines this represents approximately 32 percent initially protected. However, on the basis of total estimates of white pine worth protecting on the forest, or 682,540 acres, there has been only approximately 14 percent initially worked. Acres of white pine on maintenance, 1,882 acres, is negligible.

In 1947 initial work was done on 1,514 acres, second working on 128 acres, and third working on 1,339 acres. Details are given in Table 2. In all 151,441 ribes were removed from 3,005 acres at a cost of 2,800 man-days. Thus ribes averaged 50 per acre.

The use of high school boys and local farmers during days they could be spared from farming, continued to be an adequate source of ribes eradication labor in 1947. Particularly on the Mesaba and Aurora Districts these local settlers, trained in blister rust control and having a personal interest in protecting the local white pine which many of them had begun to plant, made up trustworthy and excellent ribes eradication crews. Labor on the Gunflint District was made up largely of high school boys carefully selected chiefly from small towns. The men were housed and fed in a Government (Laissez) camp, formerly a C.C.C. camp. Labor was more readily available this year and as a result both the quality and quantity of work improved over 1946.

Systematic checking after eradication on 2,503 acres worked and checked showed ribes remaining at the rate per acre of 2.2 bushes and 4.7 F.I.S.

Rust conditions are bad on the Superior National Forest and are rapidly getting worse. Numerous areas exist where the damage stage has been reached, and the existing white pines are too far gone to protect. The number of these areas, and the size of each area, are increasing each year. According to previous studies we may expect a disastrously high percent loss of young white pines in most of the unprotected stands by 1950.

Plans have been made for initial working on the Gunflint, Tofte, Aurora and Mesaba Districts, and for second working on all Districts except the Mesaba. In selecting areas to be worked, those having the largest number of young trees, and in most immediate danger of blister rust damage were given the highest priority. Work on the Tofte and Gunflint Districts is planned out of Government subsisted camps, while that on the Mesaba and Aurora Districts, as in the past, is expected to be done by local settlers driving to the jobs.



## Chippewa National Forest - Manganese

The Chippewa National Forest is also a good white pine growing forest. The 12,835 acres of white pine listed in the control problem are made up of 11,096 acres of natural and 1,739 acres of planted white pine. White pine occurs on the Chippewa in association with red pine under which it grows well and eventually takes up the larger portion of the succeeding stand. In such situations ribes conditions are not bad. Most of the white pine plantings have been established in the Remer, Walker and Bena Districts in the southern part of the forest.

Of the 12,835 acres of white pine listed in the control areas, 10,573 acres have been initially worked and 8,150 acres have been placed on maintenance. Acres in the control problem on the Chippewa were reduced in 1947 below those given in other years because of the transfer on the records of pine acreages in the Walker District to the Leech Lake Indian Reservation.

In 1947 to initially protect 112 acres of white pine 25,223 ribes were removed from 177 acres at a cost of 194 man-days. Second working on 617 acres and third working on 604 acres was done as shown in Text Table 9. Altogether 76,907 bushes were destroyed on 1,478 acres of control area to protect 972 acres of white pine, using 766 man-days.

Initial work was done on the Cut Foot Sioux, Marshall and Fergus Districts; second working on the Bena, Cass Lake, Dora Lake, Remer and Walker Districts; and third working on the Bena, Cass Lake and Remer Districts. Fourth working was done on the Cass Lake District.

Results of checking after eradication on 1,353 acres worked showed 7.7 bushes with 2.7 F.L.S. per acre. There were 1,109 acres with averages of less than 25 F.L.S. per acre and 244 acres averaging between 25.1 and 50.0 F.L.S. per acre.

Rust conditions remained in 1947 substantially as in 1946. Pine infection in limited amounts is known to be present in nearly all of the pine areas in the northern half of the forest. Pine infection is particularly heavy in southwestern portions near Cass Lake and Walker. Ribes are generally more abundant in the southern part of the forest, and in some plantations the rust has reached the damage stage. However, timely rework will prevent serious loss in most cases.

Work plans have been submitted listing areas recommended for initial and rework in six Districts during the remainder of fiscal year 1948 and for fiscal year 1949. These recommendations include 359 acres to be worked initially and 1,417 acres of rework. To accomplish this program would require an estimated 630 man-days labor.

With the rust well distributed on the forest, and intensifying, there is only a short time before damage will be present in unprotected stands. Available labor must be well utilized in control work to keep losses to a minimum.



### Wayne National Forest - Ohio

According to records there are 520 acres of planted white pine on this forest in southern Ohio, of which 514 acres have been initially worked and are on maintenance. This forest is in southern Ohio where ribes are not abundant. It was possible, this year, to examine 315 acres of white pine and add them to the 199 acres which were already on maintenance as they were found to be essentially free from ribes. Thus all but 6 acres of pine of the entire 520 acres is now on maintenance. White pine grows in excellent fashion in this part of the State due to proper soil conditions and long growing season. It is anticipated that practically no blister rust control problem will be involved in white pine plantings on the Wayne National Forest.

### Hoosier National Forest - Indiana

A survey of white pine on the Hoosier was made in 1947. Only 18 acres of white pine were found to be worth protecting. The control area of 179 acres was found to be free of ribes and consequently the 18 acres of pine were placed on maintenance. This portion of Indiana, like southern Ohio is essentially ribes-free. White pine makes excellent growth in this part of the State and since there is practically no danger of infection by blister rust it is a very desirable species to include in the planting program.

### Expenditures

Expenditures (3104 funds) by National Forests in Region 9 for blister rust control in 1947 are shown in Text Table 14 in the total amount of \$117,653.45. As shown in the table, the largest single item was spent in local control on the Superior National Forest. Not included in these costs are the activities on the forests of blister rust control personnel employed by the Bureau of Entomology and Plant Quarantine. These men assisted in training crews, checked, laid out work, and, in some cases, due to shortage of supervision, actually directed operations.

### Recommendations for 1948

Specific recommendations are given in the 1947 blister rust control reports for each individual forest. Detailed work plans and budgets have been prepared cooperatively between representatives of the Forest Service and the Bureau of Entomology and Plant Quarantine. In planning work for the immediate future several factors must be carefully considered.

- (1) Rust is thoroughly established and intensifying so rapidly that in many cases a delay in ribes eradication of one to a few years will mean the loss of young white pine stands from blister rust.
- (2) In the selection of areas for working great care must be exercised to make sure that only those areas are worked in which the young pine values are the greatest and in most immediate danger of damage from blister rust.

In view of the large amount of work yet to be done in accomplishing control work, of the rapidity with which the rust is intensifying, it is inevitable that millions of young pines on thousands of acres will be killed by blister rust. This means a loss of many existing white pine stands. On many such areas white pine is the best crop. The removal of ribes from these areas should be performed in time to permit future or continued development of white pine forests.



Text Table 9. Local Control on National Forest Lands, by National Forest and Operating Agency, North Central Region, 1947

National Forest	Operating Agency	No. Areas	Acres White Pine Protected			Acres Control Area Worked	Rises Bunkers Destroyed	8-Hour Man-Days Used
			Natural	Planted	Total			
<u>First Working</u>								
Hoosier, Indiana	Bureau-State	3	-	18	18	179	-	-
Wayne, Ohio	Bureau-State	2	-	315	315	2,186	-	-
Manistee, Michigan	Forest Service	2	-	92	92	186	-	-
Marquette, Michigan	Forest Service	1	80	-	80	220	4,918	14
	Bureau-State	1	80	-	80	300	-	-
	<u>Sub-total</u>	6	160	407	567	525	5,332	24
Mawa, Michigan	Forest Service	7	1,160	-	1,160	2,925	15,591	3
	Bureau-State	5	317	-	317	1,570	57	-
	<u>Sub-total</u>	12	1,477	-	1,477	4,495	15,648	3
Ottawa, Michigan	Forest Service	10	729	-	729	2,000	10,124	-
Superior, Minnesota	Forest Service	9	1,578	15	1,593	1,794	19,123	-
Chippewa, Minnesota	Forest Service	5	182	112	294	171	2,153	-
Chequamegon, Wisconsin	Forest Service	4	630	-	630	842	2,321	-
Nicolet, Wisconsin	Forest Service	3	233	-	233	389	1,134	-
All Forests	Forest Service	11	4,098	138	4,236	8,273	355,051	2,891
	Forest Service	11	397	333	730	4,203	51	7
	Bureau-State	11	397	333	730	4,203	51	7
	<u>Total, First Working</u>	82	4,495	471	4,966	12,476	355,102	2,901

(Continued)

Text Table 9. (Cont'd) Local Control on National Forest Lands, by National Forest and Operating Agency, North Central Region, 1947

National Forest	Operating Agency	No. Areas	Acres White Pine Protected		Acres Control Area Worked	Ribes Bushes Destroyed	8-hour Man-Days Used
			Natural	Planted			
<u>Second Working</u>							
Huron, Michigan	Forest Service	1	-	50	70	910	1
Manistee, Michigan	Forest Service	6	139	192	1,259	338	19
	Bureau-State	3	-	210	625	26	4
	Bureau-Intermingled	3	60	-	245	134	5
	Sub-total	12	199	402	2,129	468	
Marquette, Michigan	Forest Service	3	145	100	760	4,105	
Hiawatha, Michigan	Forest Service	1	200	-	420	2,587	
Ottawa, Michigan	Forest Service	6	700	-	1,325	97,160	
Superior, Minnesota	Bureau-State	1	-	62	122	3,560	
Chippewa, Minnesota	Forest Service	9	118	197	617	22,200	
Chequamegon, Wisconsin	Forest Service	1	1,069	-	1,375	20,441	393
	Bureau-Intermingled	4	1,849	1	3,241	103,049	1,054
	Sub-total	5	2,918	1	4,616	123,190	
Micolet, Wisconsin	Forest Service	3	270	147	983	1,223	
All Forests	Forest Service	30	2,641	686	7,009	103,144	1,594
	Bureau-State	4	-	272	747	3,606	41
	Bureau-Intermingled	7	1,909	1	3,486	103,183	1,059
Total, Second Working		44	4,550	959	11,242	270,293	2,684

(Cont'd)



Text Table 9. (Cont'd) Local Control on National Forest Lands, by National Forest and Operating Agency, North Central Region, 1947

National Forest	Operating Agency	No. Areas	Acres White Pine Protected			Control Area Worked	Ribes Bushes Destroyed	B-Hour Man-Used
			Natural	Planted	Total			
Third and Other Workings								
Manistee, Michigan	Forest Service	4	65	505	570	1,700	3,806	36
	Bureau-State	2	-	212	212	753	13	2
	Bureau-Intermingled	2	60	-	60	120	1,452	14
Sub-total		8	125	717	842	2,573	5,271	
Ottawa, Michigan	Forest Service	2	75	125	200	1,210	1,000	
Superior, Minnesota	Forest Service	11	235	409	644	3,339	4,031	
Chippewa, Minnesota	Forest Service	7	350	155	505	834	24,210	
Nicolet, Wisconsin	Forest Service	4	-	124	124	800	21,075	
All Forests	Forest Service	29	786	2,081	2,867	5,773	103,933	1,790
	Bureau-State	2	-	212	212	753	13	2
	Bureau-Intermingled	2	60	-	60	120	1,452	14
Total, Third and Other Workings		15	414	2,393	2,807	6,905	125,393	

(Cont'd)



Text Table 9. (Cont'd) Local Control on National Forest Lands, by National Forest and Operating Agency, North Central Region, 1947

National Forest	Operating Agency	No. Areas	Acres White Pine Protected			Control Area Worked	Ribes Bushes Destroyed	8-Hour Man-Days Used
			Natural	Planted	Total			
All Workings								
Hoosier, Indiana	Bureau-State	3	-	18	18	179	-	-
Wayne, Ohio	Bureau-State	3	-	20	20	2,175	-	-
Huron, Michigan	Forest Service	1	-	50	50	26	918	-
Manistee, Michigan	Forest Service	12	204	790	994	3,359	4,104	55
	Bureau-State	5	-	422	422	1,378	39	6
	Bureau-Intermingled	5	120	-	120	365	1,586	19
	Sub-total	20	324	1,212	1,536	5,102	5,748	-
Marquette, Michigan	Forest Service	4	225	100	325	980	9,403	203
	Bureau-State	1	80	-	80	300	14	1
	Sub-total	5	305	100	405	1,280	9,417	-
Hiawatha, Michigan	Forest Service	8	1,360	-	1,360	3,515	18,178	153
	Bureau-State	5	317	-	317	1,570	37	3
	Sub-total	13	1,677	-	1,677	5,113	18,215	-
Ottawa, Michigan	Forest Service	19	1,590	453	2,043	4,135	290,000	1,500
Superior, Minnesota	Forest Service	20	1,652	494	2,146	2,883	447,861	2,231
	Bureau-State	1	-	62	62	122	3,580	37
	Sub-total	39	3,242	557	3,799	7,139	731,441	-
Chippewa, Minnesota	Forest Service	21	930	-	930	1,478	12,900	-
Chequamegon, Wisconsin	Forest Service	5	1,499	-	1,499	2,217	32,714	509
	Bureau-Intermingled	4	1,849	1	1,850	3,241	103,019	1,054
	Sub-total	9	3,348	1	3,349	5,718	145,613	-
Micolet, Wisconsin	Forest Service	10	1,073	-	1,073	2,219	12,219	-
All Forests, Region	Forest Service	100	7,525	2,905	10,430	21,055	622,428	6,161
	Bureau-State	17	397	817	1,214	5,703	3,670	50
	Bureau-Intermingled	9	1,969	1	1,970	3,606	104,635	1,073
Total, All Workings		126	9,891	3,763	13,654	30,364	730,753	7,241



Text Table 10. Results of Checking After Ribes Eradication on National Forests.  
North Central Region, 1947

National Forest	No. Areas	Acres Worked and Checked		Checking After Eradication				Classification of Worked Areas on Basis of Ribes F.L.S. per Acre Left After Eradication			
		Strip Acres	Ribes Found Bushes	Ribes per Acre F.L.S.	F.L.S. (Acres)	F.L.S. (Acres)	F.L.S. (Acres)	0.0 to 15.0 FLS (Acres)	15.1 to 25.0 FLS (Acres)	25.0 Over 25.0 FLS (Acres)	Total FLS (Acres)
Huron, Mich.	1	70	2.0	3	8.0	1.50	4.00	70	0	0	0
Manistee, Mich.	22	5,102	98.5	13	25.0	.13	.25	5,102	0	0	0
Marquette, Mich.	5	1,280	22.7	47	112.0	2.07	4.93	1,280	0	0	0
Hiawatha, Mich.	13	5,115	67.2	120	162.5	1.78	2.42	4,170	945	0	0
Ottawa, Mich.	19	4,135	126.5	491	612.5	3.88	4.84	3,838	297	0	0
Superior, Minn.	16	2,503	78.3	158	369.2	2.02	4.72	2,339	122	42	42
Chippewa, Minn.	17	1,353	45.4	350	803.0	7.71	2.69	957	152	244	244
Chequamegon, Wis.	9	5,458	112.1	229	466.2	2.04	4.2	5,458	0	0	0
Nicolet, Wis.	6	1,608	23.6	72	191.3	3.05	8.1	1,308	300	0	0
Region Total	103	26,684	570.3	1,483	2,718.7	2.37	4.77	24,522	1,225	306	306

Text Table 11. Status of Control on National Forests, North Central Region,  
on December 31, 1947 Net Acres

National Forest	Total Control Problem, Acres				Acres Initially Worked				Acres Not Initially Worked				Acres On Maintenance		Percent Init.	
	Natural Planted		Total Control		Natural Planted		Total Control		Natural Planted		Total Control		Pine Area		Pine Area	
	W. P.	W. P.	W. P.	Area	W. P.	W. P.	W. P.	Area	W. P.	W. P.	W. P.	Area	Pine	Area	Work	Main.
Hoosier	-	18	18	179	-	18	18	179	-	-	-	-	18	179	100.	100.
Wayne	-	520	520	4,341	-	514	514	4,029	6	312	312	4,029	514	4,029	98.8	98.8
Huron	262	1,001	1,263	5,038	247	1,001	1,248	5,008	15	30	30	3,601	779	3,601	98.8	61.6
Manistee	2,164	19,959	22,123	68,834	1,994	19,659	21,653	67,544	470	1,290	1,290	62,749	20,228	62,749	97.8	91.4
Marquette	5,777	5,010	10,787	25,155	5,622	5,010	10,632	24,470	155	685	685	11,030	4,244	11,030	98.5	39.3
Hiaawatha	8,702	2,569	11,271	31,977	8,202	2,569	10,771	30,277	500	1,700	1,700	13,455	3,831	13,455	95.5	33.9
Ottawa	7,539	4,036	11,575	21,988	7,237	3,865	11,102	20,478	473	1,510	1,510	6,600	3,421	6,600	95.9	29.5
Superior	78,380	4,162	82,542	131,790	22,052	4,162	26,214	35,857	56,328	95,933	95,933	2,198	1,882	2,198	31.7	2.2
Chippewa	11,096	1,739	12,835	26,124	8,834	1,739	10,573	21,412	2,262	4,712	4,712	15,255	8,150	15,255	82.3	63.4
Chequamegon	12,036	4,732	16,768	41,370	11,909	4,460	16,369	39,000	399	2,370	2,370	11,795	6,520	11,795	97.6	38.6
Nicolet	5,920	6,366	12,286	24,159	5,445	6,366	11,811	23,344	475	815	815	9,040	4,202	9,040	96.1	34.2
<b>Region Total</b>	<b>151,876</b>	<b>70,112</b>	<b>181,988</b>	<b>350,893</b>	<b>71,811</b>	<b>40,366</b>	<b>112,177</b>	<b>274,588</b>	<b>61,083</b>	<b>129,357</b>	<b>129,357</b>	<b>1,071,893</b>	<b>371,788</b>	<b>1,071,893</b>	<b>88.8</b>	<b>30.8</b>



Text Table 12. Summary of Local Control Performed on National Forests, North Central Region, from Inception to December 31, 1947, All Agencies Gross Acres

National Forest	Gross Acres W. P. Protected	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average per Acre Worked	
					Ribes	Man-Days
		Initial Working				
Shawnee, Illinois	1	50	0	0	0.0	0.00
Hoosier, Indiana	18	179	0	3	0.0	0.02
Wayne, Ohio	514	4,029	56	13	Trace	0.01
Baron, Michigan	1,592	6,361	64,475	512	10.1	0.08
Manistee, Michigan	21,189	66,932	154,904	1,385	2.3	0.02
Marquette, Michigan	10,835	26,757	848,089	7,299	31.7	0.27
Hiawatha, Michigan	9,559	29,911	677,396	5,412	22.6	0.18
Ottawa, Michigan	13,967	28,170	4,186,353	16,141	148.6	0.57
Superior, Minnesota	25,448	41,771	6,089,837	26,153	145.8	0.63
Chippewa, Minnesota	14,426	36,723	3,121,528	13,861	85.0	0.38
Chequamegon, Wisconsin	16,369	59,110	2,630,355	16,500	67.3	0.42
Nicolet, Wisconsin	12,102	28,888	2,269,821	14,163	78.6	0.49
Total, Initial Working	155,680	343,831	20,342,014	101,142	64.9	0.35
		Second Working				
Baron, Michigan	497	1,628	26,439	154	16.2	0.09
Manistee, Michigan	4,290	13,713	10,518	157	0.8	0.01
Marquette, Michigan	5,152	11,745	116,719	2,303	9.9	0.20
Hiawatha, Michigan	5,576	13,596	105,300	1,559	7.7	0.11
Ottawa, Michigan	9,358	17,167	807,898	5,943	47.1	0.35
Superior, Minnesota	10,959	15,298	1,114,234	8,492	72.8	0.56
Chippewa, Minnesota	4,552	9,805	271,529	2,364	27.7	0.24
Chequamegon, Wisconsin	12,918	22,441	584,327	6,671	26.0	0.30
Nicolet, Wisconsin	9,731	18,351	345,598	4,174	18.8	0.23
Total, Second Working	63,033	123,744	3,382,582	31,017	27.3	0.26

Table 12. (Contd.) Summary of Total Cattle Harvested on National Forests, from December 31, 1917, All Species Gross Acres

National Forest	Gross Acres W. P. Protected	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average per Acre Worked	
					Ribes	Man-Days
<u>Third and Other Workings</u>						
Huron, Michigan	8	128	464	5	3.6	0.04
Manistee, Michigan	1,310	4,004	7,100	30	1.5	0.02
Marquette, Michigan	460	1,150	3,671	110	3.2	0.10
Hiawatha, Michigan	947	2,270	11,137	223	4.9	0.10
Ottawa, Michigan	3,118	5,459	98,997	1,649	18.1	0.30
Superior, Minnesota	4,063	7,942	250,656	2,583	31.6	0.33
Chippewa, Minnesota	1,628	2,135	32,034	412	38.4	0.19
Chequamegon, Wisconsin	1,444	2,119	33,816	824	16.0	0.39
Nicolet, Wisconsin	894	1,660	34,982	719	21.1	0.43
Total Third and Other Workings	13,872	27,667	522,697	6,640	18.8	0.30

All Workings

Shawnee, Illinois	1	50	0	0	0.0	0.00
Hoosier, Indiana	18	179	0	3	0.0	0.02
Wayne, Ohio	514	4,029	56	13	Trace	0.01
Huron, Michigan	2,097	8,117	91,378	671	11.3	0.06
Manistee, Michigan	26,789	85,449	172,522	1,622	2.0	0.02
Marquette, Michigan	16,447	39,652	968,479	9,712	24.4	0.24
Hiawatha, Michigan	16,082	45,777	793,833	7,194	17.3	0.16
Ottawa, Michigan	26,443	50,796	5,093,248	23,733	100.3	0.47
Superior, Minnesota	40,470	65,011	7,454,767	37,233	114.7	0.57
Chippewa, Minnesota	20,606	48,663	3,475,091	16,637	71.4	0.34
Chequamegon, Wisconsin	30,731	63,670	3,248,498	23,995	51.0	0.38
Nicolet, Wisconsin	22,727	48,899	2,650,401	19,056	54.2	0.39
Total All Workings	208,925	460,932	25,748,219	139,069	52.0	0.30



Text Table 13. Summary of Ribes Eradication, All Workings, by National Forests and Operating Agencies, North Central Region, from Inception to December 31, 1947 Gross Acres

National Forest	Operating Agency	Gross Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre	
					Ribes	Man-Days
Shawnee, Ill.	Bureau-State	50	0	0	0.0	0.00
Hoosier, In.	Bureau-State	179	0	2	0.0	0.05
Wayne, Ohio	Bureau-State	1,029	56	13	Trace	0.01
Huron, Michigan	Forest Service	5,492	91,272	653	16.6	0.12
	Bureau-State	2,625	106	18	Trace	0.01
	Total	8,117	91,378	671	16.6	0.03
Manistee, Mich.	Forest Service	23,884	134,105	906	4.6	0.03
	Bureau-State	56,200	36,831	697	0.7	0.01
	Bureau-Interm.	365	1,586	19	4.3	0.05
	Total	80,449	172,522	1,622	2.0	0.02
Marquette, Mich.	Forest Service	36,127	765,314	8,628	21.2	0.24
	Bureau-State	3,525	203,165	1,084	57.6	0.31
	Total	39,652	968,479	9,712	23.4	0.26
Hiawatha, Mich.	Forest Service	42,012	564,127	6,446	13.4	0.15
	Bureau-State	3,765	229,706	748	61.0	0.23
	Total	45,777	793,833	7,194	17.3	0.16
Ottawa, Mich.	Forest Service	45,243	4,657,191	22,177	105.7	0.68
	Bureau-State	3,380	352,247	1,142	104.2	0.34
	Bureau-Interm.	1,173	83,810	414	71.4	0.35
	Total	50,796	5,093,248	23,733	90.5	0.37
Superior, Minn.	Forest Service	58,504	5,975,670	32,715	102.1	0.56
	Bureau-State	6,507	1,479,097	4,518	227.3	0.69
	Total	65,011	7,454,767	37,233	114.5	0.57
Chippewa, Minn.	Forest Service	34,315	2,538,635	14,030	74.0	0.41
	Bureau-State	14,348	936,406	2,607	65.3	0.18
	Total	48,663	3,475,041	16,637	71.4	0.30
Chequamegon, Wis.	Forest Service	13,510	2,839,238	20,534	65.2	0.47
	Bureau-State	11,277	247,251	1,252	21.9	0.11
	Bureau-Interm.	8,853	161,999	2,180	18.3	0.25
	Total	33,640	3,248,488	23,966	51.0	0.36
Nicolet, Wis.	Forest Service	39,747	2,386,632	17,167	60.0	0.43
	Bureau-State	8,279	256,292	1,742	31.0	0.21
	Bureau-Interm.	873	7,427	147	8.5	0.17
	Total	48,899	2,650,351	19,056	54.2	0.39
Region	Forest Service	334,864	19,952,284	123,285	59.6	0.37
	Bureau-State	114,164	3,742,167	13,824	32.8	0.12
	Bureau-Interm.	11,264	254,822	2,760	22.6	0.25
Region Total		460,292	23,948,273	139,869	52.0	0.30

Text Table 14. Forest Service (3104) Funds Spent on Blister Rust Control  
North Central Region, Calendar Year 1947

Forest	Regular 3104 Funds
Baron, Michigan	\$28.80
Manistee, Michigan	739.41
Marquette, Michigan	2,933.55
Hiawatha, Michigan	2,279.38
Ottawa, Michigan	18,464.20
Superior, Minnesota	68,716.80
Chippewa, Minnesota	15,348.54
Chequamegon, Wisconsin	4,478.00
Wisclet, Wisconsin	4,664.77
Region Total	117,653.45






# CHART 5

## STATUS OF BLISTER RUST CONTROL WORK ON NATIONAL FORESTS

LEGEND

NORTH CENTRAL REGION - 1947  
(Based on Text Table II)

-  White Pine Not Protected
-  White Pine Worked Initially but not on Maintenance
-  White Pine Worked Initially and on Maintenance



NORTH CENTRAL REGION

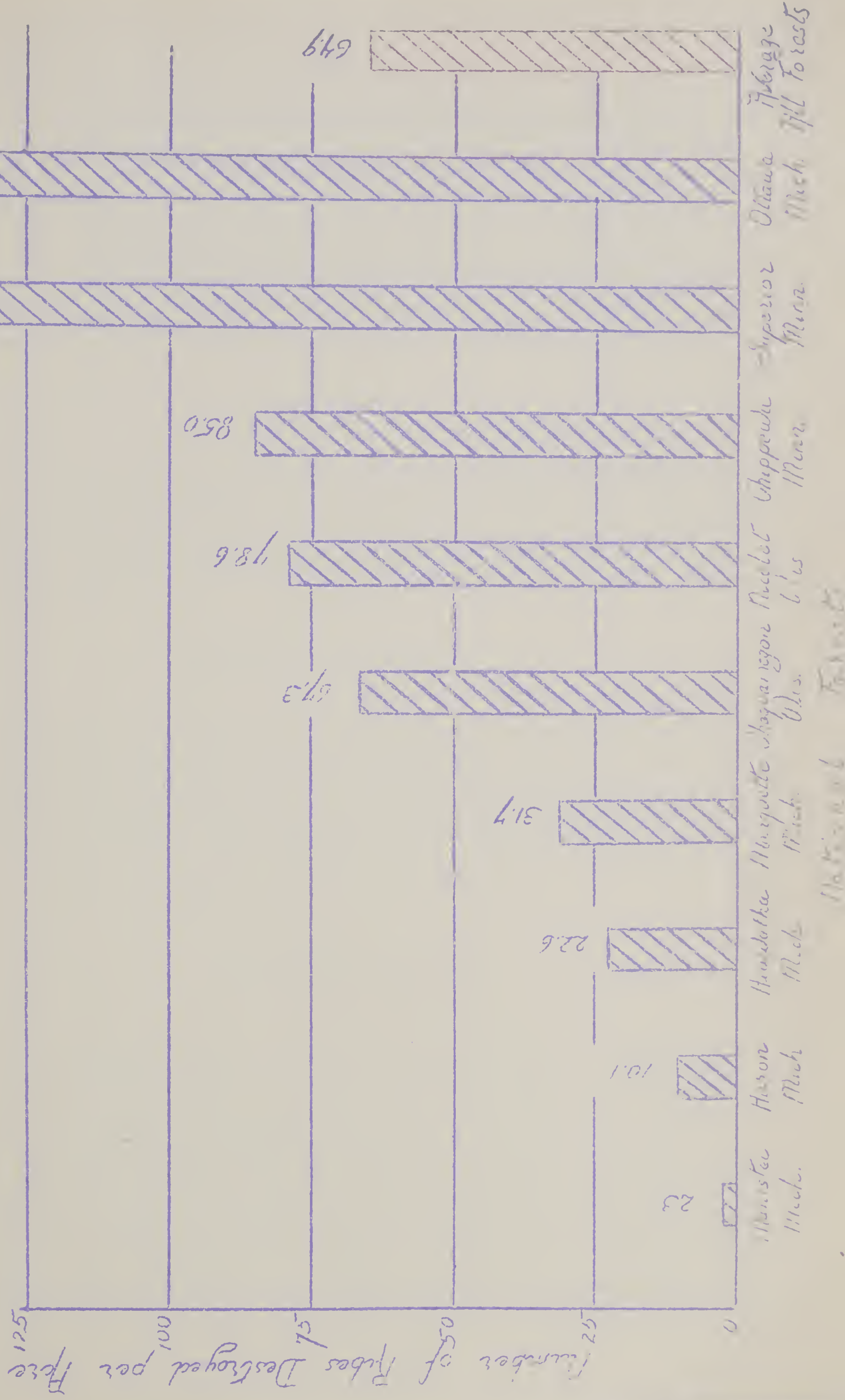
Total White Pine Area in  
NATIONAL FOREST CONTROL PROBLEM  
161,988 Acres





# CHART 6

Ribes Destroyed per Acre, Initial Ward by National Forests  
 Inception to December 31, 1947  
 North Central Region  
 (Based on Text Table 12)







## BLISTER RUST CONTROL ON INDIAN RESERVATIONS, 1947

### NORTH CENTRAL REGION FINANCIAL PROJECT BLR-7

NOTE: Outline maps of individual Indian Reservations showing status of control are not included with this year's report because changes in status were not deemed sufficiently large to warrant preparation of new maps. The reader is referred to such maps in the 1943 Report.

#### Objective

The objective of the blister rust control program on Indian Reservations is to protect against blister rust all valuable white pine stands administered by the Indian Service. This involves initial and subsequent eradication of ribes from within infecting distances of white pine stands in order to bring such stands through to commercial maturity free from blister rust damage.

#### Memorandum of Understanding

Control work on Indian Reservation lands is performed through a Memorandum of Understanding between the U.S. Indian Service and the Bureau of Entomology and Plant Quarantine. The Indian Service is responsible for selecting the pine areas to be protected and the employment of labor and supervision. The Bureau of Entomology and Plant Quarantine is responsible for the preparing of work plans and maps, keeping records, making reports of work accomplished, training of labor and supervision, and checking the adequacy of the control work.

#### Protective Zone Widths

The control of white pine blister rust involves the removal of currant and gooseberry bushes, the alternate hosts, from within the pine stand and from the immediate surrounding area. In this report, currant and gooseberry bushes will be hereafter referred to as "ribes". Under most conditions a protective zone width of 900 feet is considered adequate. During recent years, studies have indicated that it is not necessary under certain conditions to maintain a full 900 foot protective zone width. Due to the effect of screening by vegetation, zone widths have been reduced in swamps and woods depending on the density of forest cover. The protective zone widths have now been reduced to approximately 50 feet in swamps, 300 feet in dense woods, 600 feet in open woods, but retaining the full 900 feet in open fields or meadow types. The screening effect of dense swamp growth



hinders the dissemination of spores from infected ribes in the swamp to the pines in the upland. The movement of spores from swamps is further hindered by the fact that most swamps are heavily shaded and cool, thus hindering the formation of rising air currents.

By reducing these zone widths the cost of eradication is considerably lessened. Ordinarily, one crew width along the edge of a swamp will be adequate to prevent heavy infection of the adjoining pine stand. These reductions in zone widths may not give complete protection but will provide sufficient protection to bring a fully-stocked stand of pine through to commercial maturity.

### Rust Conditions

#### General Status for 1947

Abundant rainfall and prolonged periods of high humidity were again evident in 1947 on Indian Reservations. These conditions are conducive to the spread of blister rust since they offer optimum conditions for the development of the disease. These favorable conditions have been prevalent since 1937. Blister rust has spread and rapidly intensified, particularly in the northern portions of the three Lake States.

Blister rust has been found on white pine and on ribes in all of the reservations except the Sac-Fox in Iowa. The earliest infection on Indian Reservations was found on the Menominee in Wisconsin in 1918. Rust on both ribes and white pines was found for the first time on the Lac du Flambeau in Wisconsin in 1946. Fortunately, ribes eradication was started in time and has continued on a sufficiently adequate basis to save large areas of white pine on all the Indian Reservations from excessive loss due to blister rust.

#### Significance of Present Rust Conditions

In order to better understand the significance of a small amount of pine infection in an unprotected stand three periods of development are recognized as follows: (1) Introductory Period; (2) Period of Intensification; and (3) Period of Climax. These periods are discussed in the 1946 report.

#### Control Accomplishment in 1947

Initial or rework in 1947 was performed on 8 of the 11 Reservations, or on all but the Sac-Fox, Nett Lake and Vermillion Reservations. As noted in Text Table 15, there were 11,269 acres of control area cleared initially of 809,122 ribes to protect 6,943 acres of pine at a cost of 3,638 man-days. As second working 3,231 acres of white pine were protected by the removal of 234,090 ribes from 4,864 acres of control area at a cost of 2,236 man-days. In third working 7,862 acres of white pine were given protection by the removal of 650,552 ribes from 10,727 acres of control area at a cost of 4,781 man-days. In all workings 1,693,824 ribes were removed from 26,860 acres of control area to protect 18,036 acres of white pine at a cost of



10,655 man-days. This represents the largest amount of control work done in a single year since 1941, when Emergency Relief programs were operating. That ribes were abundant is indicated by the fact that for all eradication work in 1947 there was an average of 63 ribes destroyed per acre, greatest on the Grand Portage, Minnesota, where there was an average of 804 ribes per acre destroyed. The abundance of ribes by reservations is shown graphically in Chart 8 based on total work done to date.

All of this control work was performed on the basis of plans agreed upon by the Indian Service and the Blister Rust Control Organization. Indian labor was used entirely. As in each of the years since 1943 Indian women made up a high proportion of the Indian eradication crews. Indian men and women were used as crew foremen, and in general, the direct supervision of the work was handled by Indians. The Bureau of Entomology and Plant Quarantine provided technical direction and training to field men, made or revised necessary maps, checked the adequacy of control work, kept records of work done, and prepared the necessary reports.

In the selection of areas to be worked in 1947, great care was taken to make sure that the utmost in terms of pine protected would be obtained from labor expended. Those stands of young white pine of most value and in which the rust was intensifying at the most rapid rate were worked

#### Checking

In Text Table 16, results of checking after ribes eradication in 1947 are shown. It is gratifying to note that all but 186 acres of the 15,206 acres worked and checked passed as satisfactory. The check showed ribes remaining after eradication at the rate of 3.3 bushes and 5.8 F.L.S. per acre. This is a good showing.

#### General Status of Control

In Text Table 17, the status of blister rust control on Indian Reservations on December 31, 1947 is shown. The total white pine on Indian Reservations in the Region listed for protection amounts to 61,824 acres and involves a control area of 110,024 acres. Of this total acreage of pine 57,928 acres or 93.7 percent have been initially protected, and 27,564 acres or approximately 44.6 percent are now on maintenance. It will be noted that initial work has now been completed on the Sac-Fox Reservation in Iowa and on Grand Portage, Vermilion, Leech Lake, Red Lake and White Earth Reservations in Minnesota. The major problem remaining includes rework of a high proportion of the control area and the completion of initial eradication on a smaller portion. Additional pine areas were found on the Lac Court Oreilles and Lac du Flambeau Reservations in 1947.

In general, ribes are more abundant on all Indian Reservation lands than the average. The fact that such a high proportion of Indian white pine forests has been initially worked, and the absence of serious damage to white pines from blister rust, speak very well for the effective manner in which the Indian Service has performed blister rust control.



A distinction should be emphasized between "Net" acres worked and "Gross" acres worked. In Table 17 it is shown that the "Net" acres initially worked is 100,169. In Table 18 there are reported 109,883 "Gross" acres initially worked. "Gross" acres are simply the accumulation of acres worked each year. "Net" acres represent our best knowledge of acres worked and retained in the control problem. The difference between "Gross" and "Net" (9,719 acres) represents acres thrown out of control problem because sufficient pine values no longer exist, due to fire, logging, grazing, etc.

#### Status of Control by Reservations

NOTE: See 1943 Report for individual Reservation maps.

##### Sac-Fox Indian Reservation - Iowa

The Sac-Fox Indian Reservation located approximately in the center of the state of Iowa has 45 acres of planted pine with a control area of 500 acres. Ten acres with a control area of 206 acres were initially worked in 1934. In 1944 the remaining 35 acres were initially worked, and the 10 acres given a second working by removing 14,074 ribes from 500 acres of control zone at a cost of 168 man-days. Incidentally, white pine is making excellent growth on this Reservation. Annual height growths of from three to four feet are not uncommon. Excellent white pine planting sites relatively free from ribes are present on the Reservation. No work has been done since 1944.

No blister rust infection has been found on the reservation. Ribes infection, however, has been located in Tama County.

##### Grand Portage Indian Reservation - Minnesota

As a result of further examinations of areas, some pine acreage was thrown out bringing the total control problem to 974 acres of natural pine with 1,271 acres of control area. As noted in Text Table 17, all of this acreage has been initially worked, but no acreage placed on maintenance. As shown in Chart 8, ribes are very numerous on this Reservation averaging 1,279 per acre on all workings, three times as many as the next highest ribes per acre count, 437.5 on the Bad River Reservation, Wisconsin.

During 1947, Initial and Third workings were performed as shown in Text Table 15. Ribes were very abundant, averaging 805 bushes destroyed per acre.

Rust on white pine was reported for the first time in 1943. Occasional infected trees were found along the original Grand Portage Trail, chiefly originating in 1937 to 1939. In 1946, heavy pine infection was located in T.64N., R.6E. in unprotected stands. In general, ribes eradication has been thorough and timely enough to forestall serious loss.

There are no recommendations for work in 1948. The initial work has been completed, and post check indicates no need for rework in 1948.



#### Nett Lake Indian Reservation - Minnesota

No local control was performed in 1947. There are approximately 5,252 acres of white pine, all but 142 acres natural, included in the control area of 7,136 acres. Most of this acreage lies in one large block south of Nett Lake. Of this total, 5,232 acres or all but 20 acres have been initially protected and 3,674 acres or 70 percent are on maintenance.

Blister rust on ribes is general over the Reservation. Pine infection was found for the first time in 1942. Approximately 10 percent of the white pine in an unprotected plantation, established in 1937 and 1938, was found to be infected in 1942. In 1945 scouting showed the rust to be widely distributed on unprotected areas with cankers of recent origin. Fortunately, the main body of the white pine has been protected initially, and it is believed that there will be no serious loss from the rust if this protected condition can be maintained.

Scheduled for rework in 1948 are 1,301 acres of natural white pine and 101 acres of planted pine, with a control area of 1,794 acres requiring an estimated 1,726 man-days of labor. In general, prompt and effective control work has prevented serious loss from blister rust to young white pines.

#### Vermilion Indian Reservation - Minnesota

There are 78 acres of natural white pine with a control area of 186 acres on the Reservation. All of this was initially worked in 1933 and again in 1937, 1943 and 1946. Logging operations during the war years necessitated the fourth working. No work was done in 1947. A post-check should be made in 1948 to determine if further work is necessary, or if area can be placed on maintenance.

While ribes infection is general in this locality, pine infection was found for the first time near the western edge of the pine area in 1943. It is expected, however, that eradication has been sufficiently timely to prevent serious loss. Logging performed in 1944 has disturbed conditions and stimulated white pine reproduction and ribes growth.

#### White Earth Indian Reservation - Minnesota

Prior to Second and Third working, as shown in Text Table 15, done in 1947, no work had been performed since 1942. There are 481 acres of natural white pine on this Reservation, all of which have been initially protected and a considerable portion of it reworked. After 1947 workings, 231 acres of white pine or nearly half of it, have been placed on maintenance. Pine infection was found for the first time in 1941. There has been no significant increase in pine infection on protected areas since 1941.

Rework of 282 acres requiring an estimated 205 man-days is planned for the spring of 1948. This work will bring up to date the program on the White Earth Indian Reservation.



### Beech Lake (Onigum Unit) - Minnesota

The Onigum Unit is entirely within the boundaries of the Chippewa National Forest. The Indian Service, through purchase and land exchange, has increased tribal ownership in the past few years. Initial ribes eradication was performed jointly in 1934 by men employed by the Bureau of Entomology and Plant Quarantine, the Forest Service and the Indian Service. Records of this work were kept with Forest Service records until 1946, when they were transferred to the Indian Service.

There are now 2,432 acres of natural white pine with a control area of 3,387 acres. This has all been initially worked, and 2,076 acres of white pine or 85 percent is on maintenance.

In 1947 crews of Indians did second working on 2,011 acres and third working on 412 acres. Work started on May 14 and terminated before June 30. From the total of 2,423 acres, 91,919 ribes were removed at a cost of 419 man-days. Checking on this acreage showed an average of 7.1 bushes and 16.7 F.L.S. per acre after eradication (Text Table 16).

Ribes infection was first found in 1934, and one infected pine found in 1939. Subsequent search for pine infection has shown it to be light. Early ribes eradication efforts were valuable in preventing the rust from building up and doing damage.

Work is completed on this reservation for the present. No work is recommended for 1948.

### Red Lake Indian Reservation - Minnesota

This Reservation contains the largest amount of white pine of all the reservations located in Minnesota. There are 12,473 acres of white pine listed as worth protecting all of which have been given initial protection. Over half of the pine acreage, 6,757 acres, are shown as being on maintenance.

Under immediate direction of N.S. Kmeza, SP-6 Supervisor, 3 scout crews and an eradication crew totaling about 30 men performed local control from May 15 to September 18. To initially protect 70 acres of white pine, 1,930 ribes were removed from 168 acres at a cost of 53 man-days. In Third working 225,792 ribes were removed from 7,024 acres at a cost of 2,363 man-days.

Results of checking after eradication work on 4,478 acres was most encouraging. Ribes were found at the per acre rate of 1.9 bushes and 1.8 F.L.S. All of the acreage worked showed less than 15 F.L.S. per acre.

The main body of white pine lies on the peninsula projecting between Upper and Lower Red Lake. A considerable number of smaller areas, many of which are on a maintenance basis, are found immediately south of Lower Red Lake. Blister rust was first reported on both pine and ribes in the summer of 1933. Fortunately, initial local control work was performed that year and in subsequent years, thus forestalling damage to white pines which would have occurred had they not been protected in time. Post-check and scouting for the rust in 1947 indicate that the disease is well controlled on worked areas.



Logging in 1944 and 1945 has disturbed conditions. Plans for 1948 include scouting on 2,311 acres costing 950 man-days before June 30, 1948, and rework of 945 acres at a cost of 945 man-days in F.Y. 1949. This will be crew work, since scout work has been done. In addition rework is planned on 4,780 acres costing 2,515 man-days or a total of 950 man-days in 1948 and 3,460 in 1949.

#### Bad River Indian Reservation - Wisconsin

There are 6,833 acres of natural white pine listed for protection involving 13,474 acres of control area. Of this total control area 12,777 acres have been initially worked, leaving 697 acres on which initial work is needed. After 1947 workings, 3,882 acres of white pine, or 57 percent, were placed on maintenance.

Scattered pine infection has been found on the reservation. Most of it is of recent origin, since 1938. An analysis of cankers found indicates that pine infection is increasing very rapidly on unprotected areas. Ribes concentrations are heavy. Only an occasional canker has been found on protected pines.

Ribes eradication was off to a good start in 1947. An average of 19 men worked daily, starting on April 24 and continuing until October 4.

In 1947 initial eradication was performed on 3,556 acres surrounding 1,768 acres of pine. A total of 136,755 ribes was removed at a cost of 215 man-days. In second working, to protect 154 acres of pine, 8,410 ribes were removed from 646 acres of control area at a cost of 172 man-days. In third working, to protect 1,165 acres of white pine, 291,087 ribes were removed from 1,613 acres of control area at a cost of 1,150 man-days. In all, 436,252 ribes were removed from 5,815 acres of control area at a cost of 1,539 man-days. As in 1946, crews in 1947 were made up of men rather than women.

The 2,183 acres that were worked and checked showed less than 25 F.L.S. per acre, with an average of 4.3 bushes and 10.8 F.L.S. per acre. Considering the large number of ribes on this reservation, the checking results show good eradication work.

A five year program for completion of all initial working, and bringing rework up to date has been devised jointly and approved by the Reservation Superintendent. The schedule for 1948 calls for working 1,336 acres, chiefly rework, using an estimated 1,235 man-days.

#### Lac Court Oreilles Indian Reservation - Wisconsin

On this reservation there are 7,930 acres of pine, involving 16,859 acres of control area. This substantial increase of about 1,500 acres of pine over what was reported in 1946 is due to expansion of areas of white pine through natural reproduction. By the end of 1947, 7,685 acres of white pine with 15,065 acres of control area had been initially worked, and 1,998 acres of pine with 4,540 acres of control area were on maintenance. There remain 245 acres of white pine to be initially protected, and 5,687 acres of white pine to be reworked.



During 1947 there were 3,190 acres worked initially and 458 given second working. In all workings, to initiate or maintain protection on 2,366 acres of white pine, 291,032 ribes were removed from 3,648 acres of control area at a cost of 1,910 man-days. Control work started on April 30 with an average of 18 men. Work terminated on September 20. The securing of labor was much less a problem in 1947 than in previous years. Most of the men were veterans of World War II.

Checking after eradication in 1947 showed ribes at a rate of 4.7 bushes and 7.7 F.L.S. per acre, with all 3,120 acres worked and checked showing less than 25.0 F.L.S. per acre.

In 1944, rust on both ribes and pines was found quite generally distributed, and causing some damage to young pines in unprotected areas. Two infected trees were found on an area initially protected. However, these trees had cankers 10 years old, which would indicate they were formed prior to ribes eradication in 1938. In 1945 an unprotected area of white pine in pole and reproduction sizes in Sec. 3, T. 40N. R. 8W. was found with a high percentage of reproduction affected with blister rust, and many pines dead. Some of the areas worked initially in 1946 showed quite heavy infection on the young pines, while those areas previously worked showed negligible damage. Surveys in 1947 showed rust quite generally distributed, with damage negligible on areas previously protected.

In view of increased acreages of young pine found in 1944, 1945, and 1947, and the fact that rust is now present and intensifying at a rapid rate, an enlarged control program is recommended for the coming field season, in order to prevent as much loss as possible. As part of the 5 year program plans call for the working of 4,448 acres, mostly re-work, using an estimated 1,710 man-days.

#### Lac du Flambeau Indian Reservation - Wisconsin

As a result of comprehensive surveys in the winter of 1945 and 1946, new white pine areas were discovered, chiefly of natural reproduction coming in since 1937. This greatly increased the control problem from 2,094 acres of white pine with 6,579 acres of control area in 1945 to 7,513 acres of white pine with 14,249 acres of control area in 1946 and 1947. By the end of 1947, there were 6,550 acres of white pine initially protected, and 5,070 acres on maintenance. This leaves 963 acres of white pine to be initially worked, and 1,480 acres needing rework.

During 1947 there were 2,327 acres of white pine given initial working and 3 second working. To accomplish this protection of 2,330 acres of white pine 62,752 ribes were removed from 3,416 acres of control area costing 508 man-days. Ribes eradication work started May 19, 1947 and continued steadily until September 20, using a crew of five to eight men.

Systematic checking showed need for rework on some areas, which was done. Final checking on 985 acres showed all of them having less than 25 F.L.S. per acre after eradication, with an average of 5.1 bushes and 5.6 F.L.S. per acre.



Pine infection was found for the first time in 1946. Damage is fairly severe in a few small unprotected areas near the northwest corner of the Reservation. Elsewhere infection is light and scattered.

No rework is planned because areas post-checked so far will probably be placed on maintenance and probably much of the initial work to be done can be placed on maintenance after working. Surveys made in 1948 have shown additional acres of white pine. To protect this pine initially, 3,174 acres are listed for working at a cost of 240 man-days before June 30, 1948, and 805 acres to work at an estimated cost of 390 man-days after July 1, 1949.

#### Menominee Indian Reservation - Wisconsin

The Menominee Indian Reservation contains the largest amount of white pine of all the reservations in this Region. There are approximately 17,813 acres of white pine, nearly all natural, listed for protection involving 32,277 acres of control area. Of this total pine acreage, 15,364 acres, or 86 percent, have been given initial protection. The remaining 2,449 acres of white pine not initially worked are largely mature white pine not scheduled for working until after logging. Owing to the general abundance of ribes, only 3,876 acres of white pine have been placed on maintenance. The acreage increase, resulting from natural seeding in, continues to exceed the annual cut and losses from fire. The forest is under a sound, long-time management plan.

A large-scale ribes eradication program was performed in 1947, including both initial and reeradication work. Under initial working, 483 acres of white pine were protected by removing 11,457 ribes from 570 acres of control area at a cost of 284 man-days. Under rework, both second and third, 1,510 acres of pine were protected by removing 67,930 ribes from 2,475 acres of control area at a cost of 1,876 man-days. The areas worked in 1947 were selected by the Indian Service in close cooperation with the Blister Rust Control Organization, and as part of a long time plan, in order that most returns in terms of young pine protected would result from labor expended.

While Indian women were used as ribes eradicators in 1947, more men than at any time since the war made up eradication crews. The control program was administered by Forest Supervisor John Libby in close cooperation with the Wisconsin District Leader. An Indian, Louis Duquain was placed in charge of the field work. Walter Ridlington, Jr. Forester, furnished supervision. Indian men and women made up the ribes eradication crews, including both laborers and crew foremen, averaging from 20 to 30 workers daily. Best work was done in May and June before full growth of bracken fern and brush. Ribes eradication started May 5 and ended late in August.

The systematic check on acreage worked in 1947, showed that all of the work done on 3,045 acres worked was satisfactory and showed less than 25.0 F.L.S. per acre after eradication. There was an average of 4.6 bushes and 10.3 F.L.S. per acre remaining after eradication.

The Menominee Indian Reservation represents an excellent example of the value of timely and adequate ribes eradication throughout the past years.



Pine infection was found on this Reservation as early as 1918. Ribes are abundant and grow in close association with white pines. Weather conditions are favorable for the rust. The stage was set for a wholesale destruction of young white pine trees on the Reservation to the point where white pine would cease to be a tree of commercial importance if no control work had been done. However, not only was blister rust control work performed as early as 1918 around the points where infection was then found, but reasonably sustained ribes eradication work has been done ever since. As a result, white pine reproduction is coming up on protected areas in a very satisfactory manner. According to surveys and estimates, the acreage increase of white pine resulting from natural seeding continues to exceed the annual cut and loss from fire. Since forest management on the Menominee Indian Reservation is predicated on a sustained yield basis, it is important that the annual growth of white pine continues to exceed its annual cut.

A 5 year work plan for a possible post-war period was prepared jointly in 1944, and approved by the Forest Supervisor. There is a specific plan for the coming field season, approved by the Forest Supervisor. Initial work around young white pine stands is practically completed. In 1948 it is planned to work 4,575 acres mostly as rework, to protect 2,557 acres of white pine at a cost of 2,175 man-days. On the Menominee Reservation since 1943 Indian Service Regular funds (3107) have been matched by Tribal funds for blister rust control work.

#### Expenditures

Expenditures for ribes eradication by Indian Reservations and sources of funds for 1947 are shown in Text Table 19. Regular Indian Service (3107) funds were spent on nine reservations in the total amount of \$74,564.09. In addition \$7,813.86 of Menominee Indian Tribal funds were used in local control, making a total of \$82,377.95 furnished by the Indian Service. In addition, chiefly for mapping, surveying, checking, technical supervision, keeping of records, etc., Bureau of Entomology and Plant Quarantine funds were spent as part of its responsibilities towards the control program on Indian Service lands.

#### Recommendations for 1948

Specific recommendations are given in discussions of the work on each reservation. In addition, work plans and budgets prepared cooperatively between the representatives of the Indian Service and the Blister Rust Control Organization have been supplied.

In general, work recommended for the coming field season is shown for those areas most immediately in need of such working after taking into full consideration the availability of labor. Following the successful use of Indian women on ribes eradication in 1943, 1944, 1945, 1946 and 1947, it is probable that continued use of this type of labor will be made in 1948, although men will be used in increasing numbers.



Excellent stands of white pine are found on the Indian Reservations. Some of the best virgin white pine remaining in this Region are found on the Menominee Reservation. On practically all of the reservations, white pine reproduction, particularly in recent years, is seeding in naturally in gratifying amounts. Ribes conditions, generally speaking are decidedly heavier on the Reservations than the average for the Region. Blister rust infection on both pines and ribes has been known to exist either on or close to the Reservations for a good many years. Thus, if no blister rust control work had been performed, white pine in commercial forests for the future would have been precluded because necessary white pine reproduction would have been destroyed by blister rust before it reached maturity.

However, due to the timely and continued protection against blister rust of these young stands, performed cooperatively between the Indian Service and the Blister Rust Control Organization, there are at present no large areas in Indian Service ownership on which serious loss from the rust has occurred. Plans for the fiscal year 1949 for continuing most immediately needed control work, are part of an intelligent over-all plan to assure the continued production of white pine without serious loss from blister rust.

Text Table 15, Local Control on Indian Reservations, All Performed by Indian Service,  
North Central Region, 1947

Indian Reservation	No. Areas	Acres			Ribes Bushes Destroyed	Man- Days Used
		White Pine Protected				
		Natural	Planted	Total		

(Cont'd)



Text Table 15, (Cont'd) Local Control on Indian Reservations, All Performed by Indian Service,  
North Central Region, 1947

Indian Reservation	No. Areas	Acres		Acres White Pine Protected	Total	Control Area Worked	Ribes Bushes Destroyed	8-Hour Man- Days Used	
		Natural	Planted						
		Third and Other Workings							
Grand Portage, Minn.	1	25	-	25		50	19,046	103	
Red Lake, Minn.	23	5,510	-	5,510		7,024	225,792	2,363	
White Earth, Minn.	3	226	-	226		428	31,544	285	
Leech Lake, Minn.	4	286	-	286		412	64,874	245	
Bad River, Wis.	2	1,165	-	1,165		1,613	291,087	1,150	
Menominee, Wis.	3	650	-	650		1,200	18,209	635	
Total, Third and Other Workings	36	7,862	-	7,862		10,721	650,532	4,781	
		All Workings							
Grand Portage, Minn.	6	272	-	272		458	368,227	1,089	
Red Lake, Minn.	25	5,525	55	5,580		7,192	227,722	2,416	
White Earth, Minn.	6	428	-	428		863	137,073	614	
Leech Lake, Minn.	12	1,979	-	1,979		2,423	91,919	419	
Bad River, Wis.	28	3,082	5	3,087		5,815	436,252	1,539	
Lac Court Oreilles, Wis.	5	2,366	-	2,366		3,648	291,032	1,910	
Lac du Flambeau, Wis.	15	2,315	15	2,330		3,416	62,752	508	
Menominee, Wis.	10	1,993	-	1,993		3,045	78,847	2,160	
Total, All Workings	107	17,961	75	18,036		26,860	1,659,824	10,655	

Text Table 16. Results of Checking After Ribes Eradication on Indian Reservations, North Central Region, 1947

Indian Reservation	Checking After Eradication					Classification of Worked Areas on Basis of Ribes F.L.S. per Acre				
	Acres		Ribes			Left After Eradication				
	No. Areas	and Checked	Strip Acres	Ribes Bushes	Found F.L.S.	Ribes per Acre Bushes	F.L.S. per Acre			
							0.0 to 15.0 F.L.S.	15.1 to 25.0 F.L.S.	25.0 over 25.0 F.L.S.	(Acres)
Grand Portage, Minn.	4	341	5.18	51	76.0	9.8	14.7	120	120	101
Red Lake, Minn.	13	4,478	130.46	244	234.0	1.9	1.8	4,478	-	-
White Earth, Minn.	6	863	7.54	35	94.8	4.6	12.6	583	195	85
Leech Lake, Minn.	1	191	3.24	23	54.0	7.1	16.7	-	191	-
Bad River, Wis.	4	2,183	27.60	119	298.0	4.3	10.8	2,071	112	-
Lac Court Oreilles, Wis.	3	3,120	15.00	70	115.0	4.7	7.7	3,120	-	-
Lac du Flambeau, Wis.	5	985	6.80	35	38.0	5.1	5.6	750	235	-
Menominee, Wis.	10	3,045	51.40	238	527.5	4.6	10.3	2,445	600	-
Region Total	46	15,206	247.32	815	1,437.3	3.3	5.8	12,567	1,455	181

Note: No official, statistical check was given to 2,754 acres worked. However many of these areas were checked administratively and found satisfactory.



Text Table 17. Status of Control on Indian Reservations, North Central Region,  
on December 31, 1947, Net Acres

Indian Reservation	Total Control Problem, Net Acres				Initially Worked, Net Acres				Not Initially Worked, Net Acres			
	Natural Planted		Total Control		Natural Planted		Total Control		White Control		White Control	
	W. P.	W. P.	W. P.	Area	W. P.	W. P.	W. P.	Area	Pine	Area	Pine	Area
Sac-Fox	-	45	45	500	Iowa							
									45	500	-	-
Grand Portage	974	-	974	1,271	Minnesota							
Leech Lake	2,432	-	2,432	3,387	974	-	974	1,271	-	-	-	-
Nett Lake	5,110	142	5,252	7,136	2,432	-	2,432	3,387	-	-	2,076	2,755
Red Lake	12,231	242	12,473	19,622	5,090	142	5,232	7,093	43	20	3,674	5,010
Vermilion	78	-	78	186	12,231	242	12,473	19,622	-	-	6,757	9,247
White Earth	481	-	481	1,063	78	-	78	186	-	-	-	-
					481	-	481	1,063	-	-	231	545
Total	24,305	384	24,689	32,665	21,665	384	22,049	32,622	20	45	12,730	17,587
Bad River	6,833	-	6,833	13,474	Wisconsin							
Lac Court Oreilles	7,500	430	7,930	16,859	6,614	-	6,614	12,777	219	697	3,832	6,007
Lac du Flambeau	7,498	15	7,513	14,249	7,255	430	7,685	15,065	245	1,794	1,998	4,540
Menominee	17,561	252	17,813	32,277	6,535	15	6,550	12,691	963	1,558	5,070	9,576
					15,112	252	15,364	26,514	2,449	5,763	3,876	6,635
Total	39,392	697	40,089	76,858	35,506	697	36,203	67,047	3,876	9,812	14,686	25,523
Region Total	63,697	1,081	64,778	110,524	56,802	1,120	57,922	100,169	3,896	9,855	27,584	44,925

Table 18. Summary of Local Control Performed on Indian Reservations, North Central Region, From Inception to December 31, 1947. Work Done by Indian Service Except as Noted. Gross Acres

Indian Reservation	Acres White Pine Protected	Acres Worked	Ribes Destroyed	8-Hour Man-Days Used	Average Per Acre Worked	
					Ribes	Man-Days
<u>Initial Working</u>						
Sac-Fox, Iowa	45	500	13,462	169	26.9	0.34
Grand Portage, Minn.	1,012	1,620	2,367,154	4,525	1461.2	2.79
Leech Lake, Minn. (a)	2,562	3,323	378,885	1,007	114.0	0.30
Pott Lake, Minn.	4,497	7,126	527,722	1,841	74.1	0.26
Red Lake, Minn.	13,174	20,168	6,740,408	11,216	334.2	0.56
Vermilion, Minn.	72	286	137,530	424	480.9	1.48
White Earth, Minn. (b)	466	1,354	398,705	1,178	294.5	0.87
Sac River, Wis.	6,627	13,231	8,205,163	18,770	620.1	1.42
Lac Court Oreilles, Wis.	7,696	15,554	1,382,410	10,282	88.9	0.66
Lac du Flambeau, Wis.	6,153	12,859	683,379	3,599	53.1	0.28
Dunsmuir, Wis.	20,187	33,867	10,229,975	33,363	302.1	0.99
Total, Initial Working	62,491	109,888	31,064,793	86,374	282.7	0.79
Includes work done on Bureau-State funds as follows:						
(a) Leech Lake	-	1,675	52,533	275	31.4	0.16
(b) White Earth	-	932	252,747	693	257.4	0.71
Total	-	2,607	305,280	968	114.9	0.36
<u>Second Working</u>						
Sac-Fox, Iowa	10	206	3,592	57	17.4	0.28
Grand Portage, Minn.	224	316	154,501	395	488.9	1.25
Leech Lake, Minn. (c)	2,283	3,012	197,460	831	65.6	0.28
Pott Lake, Minn.	2,967	3,377	303,350	2,287	89.8	0.68
Red Lake, Minn.	10,557	14,752	1,521,399	6,151	103.1	0.42
Vermilion, Minn.	72	206	29,912	210	145.2	1.02
White Earth, Minn.	437	807	136,593	526	169.3	0.65
Sac River, Wis.	2,916	5,677	1,122,112	4,471	197.7	0.79
Lac Court Oreilles, Wis.	2,558	5,535	202,104	1,754	36.5	0.32
Lac du Flambeau, Wis.	2,080	6,032	46,443	370	7.7	0.06
Dunsmuir, Wis.	9,865	17,362	1,693,527	13,712	97.5	0.79
Total, Second Working	33,974	57,282	5,410,993	30,764	94.5	0.54
Includes work done on Bureau-State funds as follows:						
(c) Leech Lake	-	632	44,189	211	69.9	0.33

(Cont'd)



Text Table 18. (Cont'd) Summary of Local Control Performed on Indian Reservations, North Central Region, From Inception to December 31, 1947. Work Done by Indian Service Except as Noted. Gross Acres

Indian Reservation	Acres White Pine Protected	Acres Worked	Ribes Destroyed	8-Hour Man- Days Used	Average for Acres Worked	
					Ribes	Man
					Ribes	Days
Third and Other Workings						
Grand Portage, Minn.	25	50	19,046	103	380.9	2.06
Leech Lake, Minn.	365	502	90,639	376	180.7	0.75
Nett Lake, Minn.	72	107	21,280	340	198.9	3.10
Red Lake, Minn.	7,226	9,962	423,490	3,510	42.5	0.35
Vermillion, Minn.	150	372	40,252	418	108.2	1.12
White Earth, Minn.	226	433	45,706	345	105.6	0.80
Bad River, Wis.	2,248	3,451	453,755	1,952	131.5	0.54
Lac Court Oreilles, Wis.	188	1,120	5,505	216	4.9	0.19
Menominee, Wis.	1,687	3,056	126,935	1,943	41.5	0.64
Total, Third	12,187	19,055	1,226,658	9,103	64.4	0.48

All Workings						
Sac-Fox, Iowa	55	706	17,054	226	24.2	0.38
Grand Portage, Minn.	1,261	1,986	2,540,701	5,023	1279.3	2.53
Leech Lake, Minn. (d)	5,215	6,837	667,034	2,214	97.6	0.32
Nett Lake, Minn.	7,536	10,610	352,352	4,468	80.3	0.42
Red Lake, Minn.	30,957	44,882	8,685,297	20,877	193.5	0.47
Vermilion, Minn.	294	864	207,694	1,052	240.4	1.22
White Earth, Minn. (e)	1,129	2,594	531,004	2,049	224.0	0.79
Bad River, Wis.	11,791	22,359	9,781,030	25,093	437.5	1.12
Lac Court Oreilles, Wis.	10,442	22,209	1,530,019	12,252	71.6	0.55
Lac du Flambeau, Wis.	8,233	18,891	729,322	3,969	38.6	0.21
Menominee, Wis.	31,739	54,285	12,050,437	49,018	222.0	0.90
Total, All Workings	108,632	106,223	37,702,444	126,241	302.5	0.68

Includes work done on  
Bureau-State funds as follows:

(d) Leech Lake	-	2,307	96,722	486	41.9	0.21
(e) White Earth	-	982	252,747	693	257.4	0.71
Total	-	3,289	349,469	1,179	108.5	0.36

Text Table 19. Indian Service Funds Spent on Blister Rust Control,  
North Central Region, Calendar Year 1947

Agency	Reservation	I. S. 3107	Tribal Funds	Total
Consolidated Chippewa, Minnesota	Grand Portage	\$8,672.63	\$	\$8,672.63
	White Earth	5,001.57		5,001.57
	Leech Lake	3,111.81		3,111.81
	Nett Lake	1,111.36		1,111.36
	Sub-total	17,897.37		17,897.37
Red Lake, Minnesota	Red Lake	20,543.81		20,543.81
Great Lakes, Wisconsin	Bad River	13,578.79		13,578.79
	Lac Court Oreilles	12,848.57		12,848.57
	Lac du Flambeau	3,774.75		3,774.75
	Sub-total	30,202.11		30,202.11
Menominee, Wis.	Menominee, Wis.	5,920.80	7,813.86	13,734.66
Region Total		74,554.09	7,813.86	82,377.95






# CHART 7

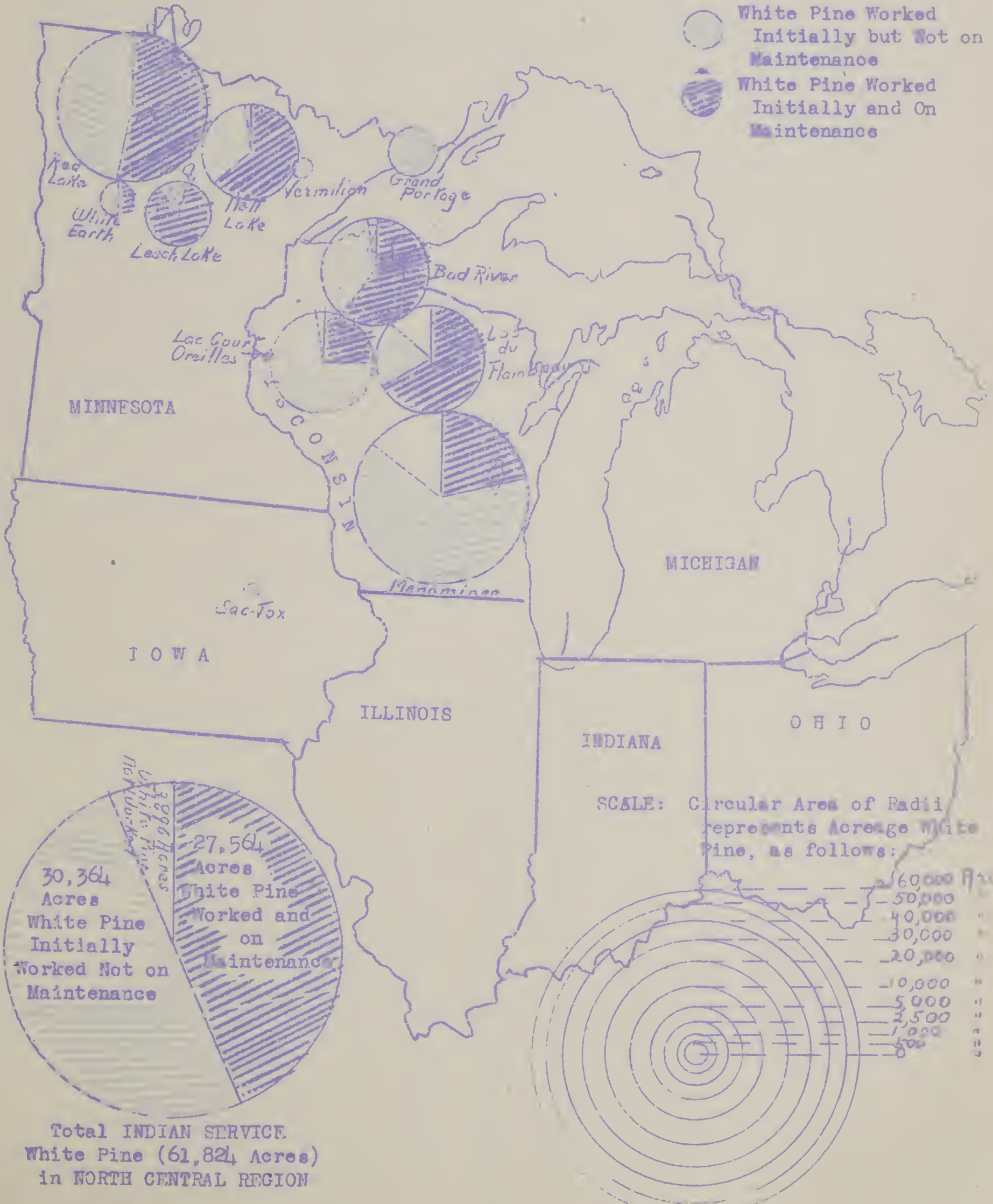
## STATUS OF CONTROL BY INDIAN RESERVATIONS

### NORTH CENTRAL REGION

On December 31, 1947  
(Based on Text Table 13)

### LEGEND:

-  White Pine Not Protected
-  White Pine Worked Initially but Not on Maintenance
-  White Pine Worked Initially and On Maintenance







# CHART 8

NUMBER OF RIBES DESTROYED PER ACRE, ALL WORKINGS.  
BY INDIAN RESERVATIONS  
NORTH CENTRAL REGION  
To December 31, 1947  
(Based on Text Table 18)

NUMBER OF RIBES BUSHES DESTROYED PER ACRE

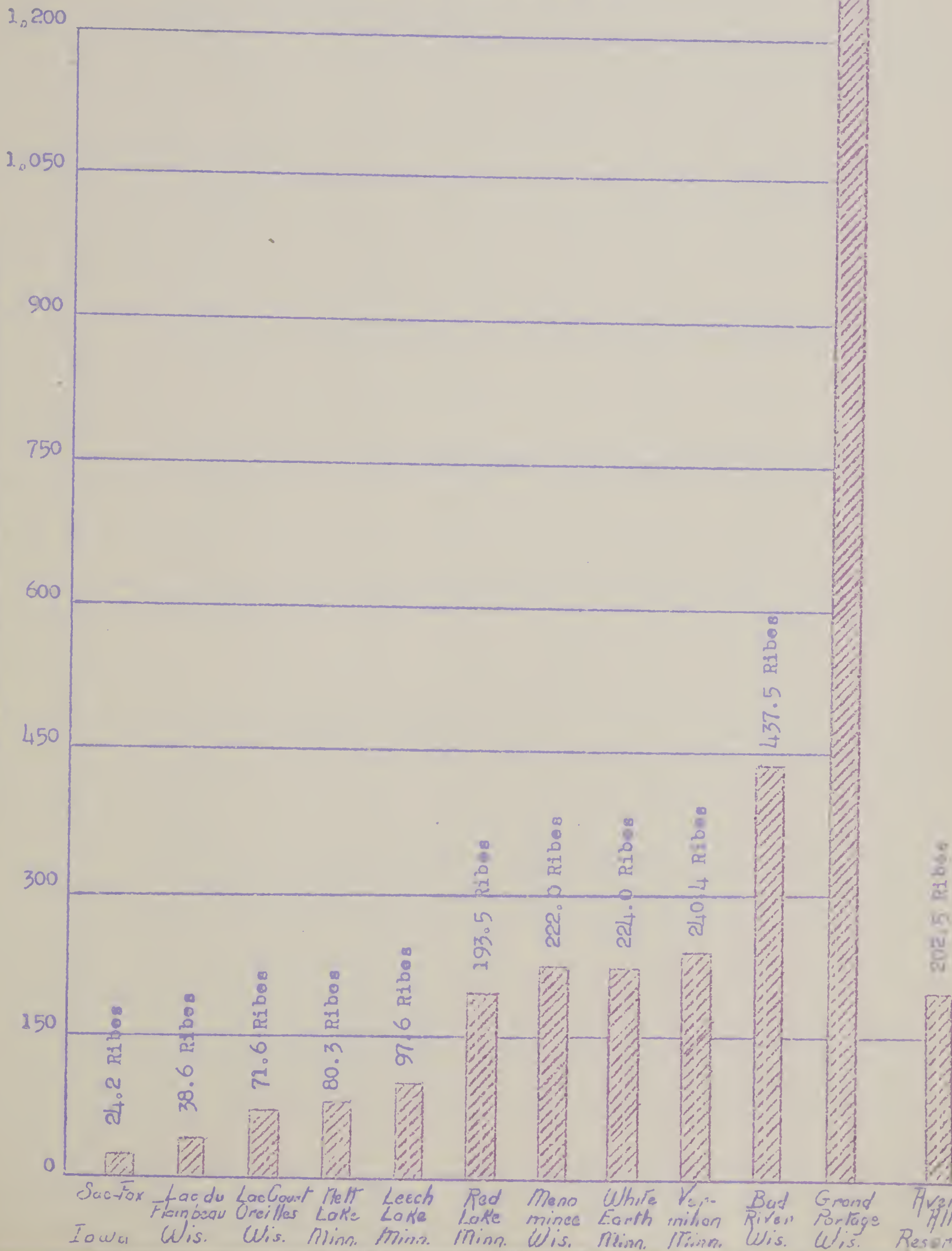






Table 1. Surveys Performed in North Central Region, 1947

State	Type of Survey	Acres Mapped		Acres Increase		Acres Decrease		Total Acres		Map- Days Used
		Previously		White		White		Mapped, Net		
		Pine	Control Area	Pine	Control Area	Pine	Control Area	White Pine	Control Area	
Illinois	Proeradication	-	-	6	70	-	-	6	70	
	Resurvey	153	10,056	24	-	113	8,779	64	1,277	65
	Post-Check	122	3,083	-	-	97	2,709	25	379	20
	Total	275	13,139	30	70	220	11,488	95	1,656	85
Indiana	Proeradication	-	-	345	2,545	-	-	345	2,545	
	Resurvey	226	3,805	31	-	147	2,428	110	1,377	9
	Post-Check	836	9,594	146	622	390	5,587	592	4,629	25
	Total	1,062	13,399	522	1,167	537	8,015	1,047	6,551	34
Ohio	Proeradication	-	-	150	1,764	-	-	150	1,764	
	Resurvey	148	3,836	77	150	58	2,016	167	1,970	9
	Post-Check	1,115	12,616	101	269	293	5,674	923	7,211	25
	Total	1,263	16,452	328	419	351	7,690	1,240	9,945	34
Michigan	Proeradication	-	-	4,896	15,410	-	-	4,896	15,410	
	Resurvey	9,796	34,969	935	2,037	7,074	26,596	3,707	10,410	110
	Post-Check	55,611	176,157	2,298	14,085	19,660	60,361	45,249	129,831	151
	Total	65,407	211,126	3,293	17,522	26,734	86,957	53,852	155,651	261
Minnesota	Proeradication	-	-	1,884	2,849	-	-	1,884	2,849	
	Resurvey	17,355	35,548	414	575	11,037	25,062	6,732	11,061	25
	Post-Check	9,083	11,644	-	-	-	-	9,083	11,644	10
	Total	26,438	47,192	2,298	3,424	11,037	25,062	17,699	25,554	35
Wisconsin	Proeradication	-	-	15,171	52,196	-	-	15,171	52,196	
	Resurvey	4,280	16,672	-	-	1,246	8,709	3,034	7,263	67
	Post-Check	33,683	96,653	3,419	3,657	4,125	19,967	32,977	80,343	145
	Total	37,963	113,225	18,590	55,853	5,371	28,676	51,184	140,502	212
Region	Proeradication	-	-	22,452	75,134	-	-	22,452	75,134	
	Resurvey	31,958	104,886	1,551	2,762	19,675	73,590	13,814	34,053	240
	Post-Check	100,450	309,552	12,964	18,633	24,565	94,293	88,849	233,307	1,163
	Total	132,408	414,532	36,967	96,529	44,240	167,883	125,115	342,594	1,403



Table 2. Summary of Local Control by States and Operating Agencies,  
North Central Region, 1947

State	Operating Agency	Number Areas Worked	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total	
			Natural	Planted			8-Hour Man-Day Used	
Initial Working								
Illinois	Bureau-State	4	-	23	23	12,775		
	Bureau-State	55	3	483	486	29,846		
	Bureau-State	20	35	25	60	30,412		
	Bureau-State	40	-	497	697	21,000		
	Bureau-State	29	1,461	120	1,581	27,578		229
Michigan	Bureau-State	15	1,175	150	1,325	49,758		326
	Bureau-State	20	2,015	93	2,108	208,390		985
	Bureau-State	64	4,651	362	5,013	205,726		1,000
	Bureau-State	6	468	-	468	61,901		404
	Bureau-State	9	400	-	400	72,335		502
Minnesota	Bureau-State	14	1,438	45	1,483	121,253		1,563
	Bureau-State	7	262	55	317	351,111		1,039
	Bureau-State	36	2,568	100	2,668	606,800		3,501
	Bureau-State	38	12,739	353	13,092	246,200		1,264
	Bureau-State	7	645	-	645	25,408		283
Wisconsin	Bureau-State	144	6,611	15	6,626	458,071		2,599
	Bureau-State	89	19,995	368	20,363	139,370		6,000
	Bureau-State	192	14,706	1,696	16,402	456,244		2,830
	Bureau-State	24	1,575	150	1,725	122,093		828
	Bureau-State	41	4,098	138	4,236	355,051		2,831
Region	Bureau-State	51	6,873	70	6,943	809,182		3,638
	Bureau-State	308	27,292	2,054	29,346	1,742,370		10,127
	Bureau-State							
	Bureau-State							
	Bureau-State							
Region Total, Initial								

(Cont'd)



Table 2. (Cont'd) Summary of Local Control by States and Operating Agencies,  
North Central Region, 1947

State	Operating Agency	Number Areas Worked	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	3-Flour Man-Days Used
			Natural	Planted			
Second Working							
Illinois	None						
Indiana	Bureau-State	29		214	2,684	20,185	112
Iowa	Bureau-State	27	9	60	597	93,330	655
Ohio	Bureau-State	51		684	5,393	34,515	1,095
Michigan	Bureau-State	51	4,154	376	12,986	43,480	504
	Bur.-Intermingled	32	3,489	185	10,273	68,357	539
	Forest Service	17	1,184	342	4,034	105,778	670
Total							
Minnesota	Bureau-State	15	1,308	112	2,323	23,254	374
	Forest Service	9	118	197	617	29,396	402
	Indian Service	11	1,896	-	2,446	132,574	503
Total							
Wisconsin	Bureau-State	48	2,417	347	10,073	200,034	1,195
	Bur.-Intermingled	4	1,849	1	3,241	103,049	1,094
	Forest Service	4	1,339	147	2,358	28,270	322
	Indian Service	9	1,330	5	2,418	101,516	1,755
Total							
Region	Bureau-State	221	7,888	1,273	36,260	127,468	5,316
	Bur.-Intermingled	36	5,338	186	13,514	171,406	1,993
	Forest Service	30	2,641	686	7,087	163,444	1,934
	Indian Service	20	3,226	5	4,861	244,050	2,350
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Table 2. (Cont'd) Summary of Forest Control by States and Operating Agencies,  
North Central Region, 1947

State	Operating Agency	Number Areas Worked	Acres White Pine Protected			Acres Worked	Number Ribes Destroyed	Total	
			Natural	Planted	Third Working			8-Hour Man-Days Used	Used
Illinois	Bureau-State	1	-	0	-	39	1,347	2	2
	Bureau-State	1	-	160	-	370	6,781	2	2
	Bureau-State	2	20	1	-	153	8,081	184	184
	Bureau-State	3	-	0	-	732	8,695	31	31
	Bureau-State	26	2,357	225	-	6,934	52,752	629	629
Michigan	Bur.-Intermingled Forest Service	10	877	16	-	2,540	42,469	179	179
	Forest Service	7	140	963	-	2,910	8,499	269	269
	Total	43	3,274	1,204	-	12,314	103,750	1,077	1,077
Minnesota	Bureau-State	1	-	-	-	-	8,000	10	10
	Forest Service	18	646	674	-	2,023	74,179	1,032	1,032
	Indian Service	31	6,047	-	-	7,914	341,256	2,996	2,996
	Total	50	6,693	674	-	9,937	423,435	4,048	4,048
Wisconsin	Bureau-State	5	1,201	469	-	3,093	126,683	1,232	1,232
	Forest Service	4	-	444	-	840	21,255	435	435
	Indian Service	5	1,815	-	-	2,813	309,296	1,735	1,735
	Total	14	3,016	913	-	6,746	457,234	3,402	3,402
Region	Bureau-State	50	3,578	963	-	11,879	212,345	2,205	2,205
	Bur.-Intermingled Forest Service	10	877	16	-	2,540	42,469	179	179
	Forest Service	29	786	2,081	-	5,773	103,933	1,736	1,736
	Indian Service	36	7,862	-	-	10,727	650,552	4,781	4,781
Region Total, Total		125	16,103	3,060	-	30,919	1,029,299	8,901	8,901

(Cont'd)



Table 2. (Cont'd) Summary of Local Control by States and Operating Agencies,  
North Central Region, 1947

State	Operating Agency	Number Areas Worked	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	8-Hour Man-Day <sup>W</sup> Used	Total
			Natural	Planted				
Illinois	Bureau-State	5	-	36	36	14,342	50	
	Bureau-State	23	3	963	966	64,105	222	
	Bureau-State	22	64	73	137	157,033	1,200	
	Bureau-State	93	-	1,434	1,434	84,882	807	
	Bureau-State	106	7,972	721	8,693	123,810	1,362	
Michigan	Bur.-Intermingled	57	5,541	351	5,892	160,584	1,044	
	Forest Service	44	3,339	1,398	4,737	322,667	1,924	
	Total	207	16,852	2,470	19,322	607,051	4,330	
Minnesota	Bureau-State	22	1,776	112	1,888	93,155	788	
	Bur.-Intermingled	9	400	-	400	72,335	502	
	Forest Service	41	2,202	916	3,118	224,928	2,997	
	Indian Service	49	8,205	55	8,260	824,941	4,598	
	Total	121	12,583	1,083	13,666	1,115,359	8,887	
Wisconsin	Bureau-State	91	16,357	1,169	17,526	572,917	5,692	
	Bur.-Intermingled	4	1,849	1	1,850	103,049	1,054	
	Forest Service	15	1,984	591	2,575	74,933	1,240	
	Indian Service	58	9,756	20	9,776	868,883	6,117	
	Total	168	29,946	1,781	31,727	1,629,782	12,103	
Region	Bureau-State	463	26,172	4,532	30,704	1,096,057	8,351	
	Bur.-Intermingled	70	7,790	352	8,142	335,968	2,600	
	Forest Service	100	7,525	2,905	10,430	622,428	6,161	
	Indian Service	107	17,961	75	18,036	1,693,824	10,665	
Region Total, All Workings		740	59,448	7,844	67,292	7,749,377	57,161	



Table 2A. Summary of Local Control by States and Ownership Classes,  
North Central Region, 1947

State	Ownership Class	Forest	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total 3-Hour Man-Day Used
				Natural	Planted			
Illinois	State & Private	Non-Fed. Public	2	-	24	182	12,975	52
		Private	2	-	4	20	-	2
		Sub-total	4	-	28	202	-	-
Indiana	Forest Service State & Private	Hoosier N. F.	2	-	19	179	-	-
		Non-Fed. Public	4	-	65	605	420	9
		Private	48	3	400	3,139	29,446	92
Iowa	State Total	Sub-total	54	3	403	3,744	29,866	101
		Non-Fed. Public	1	-	10	75	6,998	132
		Private	19	35	5	248	49,474	391
Ohio	Forest Service State & Private	Wayne N. F.	20	35	15	325	54,172	324
		Private	2	-	315	3,154	-	-
		Sub-total	22	-	302	3,479	54,172	324
Michigan	Forest Service	Manistee N. F.	2	-	93	400	-	-
		Marquette N. F.	2	160	-	520	4,932	45
		Hiawatha N. F.	12	1,477	-	4,495	15,628	125
Minnesota	State & Private	Ottawa N. F.	10	775	-	1,600	187,831	819
		Sub-total	20	2,112	93	7,015	205,441	944
		Non-Fed. Public	2	1	29	170	4,175	55
Minnesota	Forest Service	Private	36	2,238	241	6,423	73,110	496
		Sub-total	38	3,250	270	6,994	77,285	551
		Superior N. F.	9	4,651	165	15,408	235,724	1,339
Minnesota	State Total	Chippewa N. F.	5	1,356	15	1,504	98,030	1,369
		Sub-total	14	82	30	177	23,223	194
		Sub-total	14	1,438	45	1,721	121,257	1,563

(Cont'd)



Table 2A. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1947

State	Ownership Class	Forest	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total	
				Natural	Planted			3-Hour Men-Days Used	Total
Minnesota (Cont'd)	Indian Service	Grand Portage	5	247	-	408	349,181		986
		Red Lake	2	15	55	168	1,930		52
		Sub-total	7	262	55	576	351,111		1,038
	State & Private	Non-Fed. Public	13	808	-	1,177	125,839		355
		Private	2	60	-	200	8,397		71
		Sub-total	15	868	-	1,377	134,236		426
State Total				35	2,553	2,604	508,600		1,464
Wisconsin	Forest Service	Choquamegon N. F.	4	430	-	842	12,273		136
		Nicolet N. F.	3	215	-	565	13,135		67
		Sub-total	7	645	-	1,407	25,408		203
	Indian Service	Bad River	23	1,768	-	3,556	136,755		215
		Lac Court Oreilles	4	2,048	-	5,190	247,822		1,595
		Lac du Flambeau	14	2,312	15	3,377	62,037		505
				3	483	570	11,457		254
				Sub-total	44	6,611	458,914		1,028
	State & Private	Non-Fed. Public	9	5,100	240	24,109	132,316		955
		Private	29	7,639	113	25,048	113,884		522
		Sub-total	38	12,739	353	49,157	246,200		1,477
	State Total			89	19,995	24,257	189,619		1,152
	Forest Service	All Forests	52	4,495	471	12,476	355,108		2,042
		All Forests	51	6,875	70	11,269	859,138		3,094
Region	State & Private	Non-Fed. Public	31	5,909	368	26,318	282,723		1,044
		Private	174	9,975	1,145	38,572	295,563		2,007
		Sub-total	205	15,884	1,513	64,890	578,286		3,051
	Region Total, Initial			309	27,252	83,635	1,742,570		10,127

(Cont'd)



Table 2A. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1947

State	Ownership Class	Forest	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total 8-Hour Man-Day Used
				Natural	Planted			
Indiana	State & Private	Non-Fed. Public	2	-	22	327	10	2
		Private	27	-	292	2,561	28,445	110
	State Total		29	-	314	2,888	28,455	112
	State & Private	Non-Fed. Public	2	9	20	386	65,280	363
Private		25	-	40	201	28,050	272	
State Total		27	9	60	587	93,330	635	
Ohio	State & Private	Non-Fed. Public	1	-	2	130	-	-
		Private	50	-	662	5,268	38,915	495
State Total		51	-	664	5,398	38,915	495	
Michigan	Forest Service	Huron N. F.	1	-	50	70	918	6
		Manistee N. F.	12	199	402	2,129	498	28
		Marquette N. F.	3	145	100	760	4,485	159
		Hiawatha N. F.	1	200	-	620	2,587	31
		Ottawa N. F.	6	700	-	1,325	97,450	455
		Sub-total	23	1,264	552	4,974	105,948	609
Minnesota	State & Private	Non-Fed. Public	5	216	-	918	2,874	65
		Private	72	7,367	351	21,471	108,803	969
	State Total		77	7,583	351	22,389	111,677	1,034
	Forest Service	Superior N. F.	1	-	62	122	3,580	57
Chippewa N. F.		9	118	197	617	29,396	402	
Sub-total		10	118	259	739	32,976	459	
Minnesota	Indian Service	White Earth	3	202	-	435	105,529	329
		Leech Lake	8	1,694	-	2,011	27,045	174
	Sub-total		11	1,896	-	2,446	132,574	503
	State & Private	Non-Fed. Public	14	1,308	50	2,201	19,874	317
State Total		25	3,322	309	5,306	185,224	1,274	

(Cont'd)



Table 2A. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1947

State	Ownership Class	Forest	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Man-Days Used	Total	
				Natural	Planted					
Wisconsin	Forest Service	Chequamegon N. F.	5	2,918	1	2,919	123,490	3,447	129	
		Nicolet N. F.	3	270	147	417	983	7,829		
	Indian Service	Sub-total	8	3,188	148	3,336	5,598	181,319		
		Bad River	3	149	5	154	646	8,410	174	
		Lac Court Oreilles	1	318	-	318	458	43,210	315	
		Lac du Flambeau	1	3	-	3	39	715	3	
		Monominee	4	860	-	860	1,275	49,181	1,210	
	State & Private	Sub-total	9	3,550	5	3,555	2,018	101,726		
		Non-Fed. Public	8	27	265	292	1,785	34,251	225	
		Private	40	2,390	32	2,422	8,293	165,704	971	
Region	Forest Service	Sub-total	48	2,417	37	2,454	10,918	209,834	1,196	
		State Total	65	6,515	500	7,015	18,088	1,08,382	1,196	
	Indian Service	All Forests	11	1,560	97	1,657	11,912	509,315	2,381	
		State & Private	32	1,560	359	1,919	5,747	122,008	958	
	Sub-total	214	9,757	1,427	11,184	37,794	369,177	2,317		
Sub-total		246	11,317	1,786	13,103	13,541	108,005			
Region Total, Second				307	19,093	8,790	21,883	59,847	786,178	
Illinois	State & Private	Private	1	-	5	5	1,467	1,467		
		State & Private	2	-	126	126	460	1,355	21	
	Sub-total	2	-	40	42	410	1,771	21		
		State Total	4	-	165	165	870	3,238	21	
	State & Private	Non-Fed. Public	1	20	-	20	117	7,741	107	
Private		4	-	3	3	75	345	17		
State Total				5	20	3	23	892	8,183	124



Table 21. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1947

State	Ownership Class	Forest	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total 3-Month Man-Days Used
				Natural	Planted			
Third Working (Cont'd)								
Ohio	State & Private	Private						
	Forest Service	Manistee N. F.	8	125	717	2,573	5,271	
		Ottawa N. F.	3	75	458	533	1,210	4,693
Michigan	State & Private	Non-Fed. Public	8	520	3	1,673	20,152	
		Private	24	2,654	26	6,958	73,604	
			11					
Minnesota	Forest Service	Superior N. F.	11	296	479	1,339	49,831	
		Chippewa N. F.	7	350	195	684	24,348	
			1	25	-	50	19,046	
Indian Service		Grand Portage	23	5,510	-	7,024	225,792	
		Red Lake	3	226	-	428	31,544	
		White Earth	4	286	-	412	64,874	
State & Private		Leech Lake						
Wisconsin	Forest Service	Nicolet N. F.	2	1,165	-	1,613	291,037	
	Indian Service	Red River	3	650	-	1,200	18,209	
		Menominee						
State & Private	Non-Fed. Public		2	835	469	2,171	106,304	
	Private		3	366	-	922	20,379	
State Total								

(Cont'd)



Table 2A. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1947

State	Ownership Class	Forest	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total 8-Hour Man-Days Used
				Natural	Planted	Total		
Third Working (Cont'd)								
Region	Forest Service	All Forests	23	13,103	2,295	3,119	105,396	1,775
	Indian Service	All Forests	36	7,852	-	7,852	850,552	4,781
	State & Private	Non-Fed. Public	13	1,375	593	1,973	136,050	1,955
		Private	43	3,020	169	3,189	117,299	835
	Sub-total		90	4,295	762	5,157	253,149	2,610
Region Total, Third			125	13,103	3,058	16,161	1,009,299	6,171
All Workings								
Illinois	State & Private	Non-Fed. Public	2	-	24	24	12,975	5
		Private	3	-	12	12	1,347	1
	State Total		5	-	36	36	14,322	6
Indiana	Forest Service	Hoosier N. F.	3	-	19	19	-	-
	State & Private	Non-Fed. Public	8	-	213	213	2,283	30
		Private	77	3	732	735	62,822	221
	Sub-total		85	3	945	948	65,105	250
	State Total		88	3	964	967	65,105	250
Iowa	State & Private	Non-Fed. Public	4	29	30	59	578	82
		Private	48	35	48	83	465	68
	State Total		52	64	78	142	1,043	150
Ohio	Forest Service	Wayne N. F.	3	-	215	215	-	-
	State & Private	Non-Fed. Public	1	-	2	2	150	20
		Private	96	-	1,136	1,136	63,862	91
	Sub-total		97	-	1,138	1,138	63,862	110
	State Total		97	-	1,138	1,138	63,862	110

(Cont'd)



Table 2A. (Cont'd) Summary of Local Control by State and Ownership Classes,  
North Central Region, 1947

State	Ownership Class	Forest	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Man-Days Used	Total	
				Natural	Planted					Total
Michigan	Forest Service	All Workings (Cont'd)	1	-	50	70	918			
			22	324	1,212	5,102	5,769			
			5	305	100	1,280	9,417			
			13	1,677	-	5,115	18,215			
			19	1,550	458	4,135	290,024		1,151	
			Sub-total	60	3,856	1,820	16,702	324,443		1,151
	State & Private	15	757	32	2,761	27,201		3,000		
		132	12,259	618	12,877	34,852	255,517	2,000		
	Sub-total	147	13,016	650	17,635	282,718		2,000		
	State Total	297	16,992	2,100	19,122	307,061		4,000		
Minnesota	Forest Service	Superior N. F.	21	1,692	556	3,005	151,401			
			21	550	422	1,478	76,967			
			Sub-total	42	2,202	978	4,483	228,368		3,000
			Indian Service	6	272	-	458	368,227		1,000
				25	5,525	55	7,192	227,722		2,000
				6	428	-	863	137,073		600
	12	1,980		-	2,423	91,919		400		
	Sub-total	49	8,205	55	10,933	324,941		4,000		
	State & Private	27	2,116	50	3,378	145,513		1,000		
		3	60	-	200	16,397				
Sub-total	30	2,176	50	3,578	161,910		1,000			
State Total	121	12,383	1,003	12,911	1,215,259		8,000			
Wisconsin	Forest Service	Chequamegon N. F.	9	3,548	1	5,458	135,765		1,000	
			10	1,855	591	2,388	42,219		600	
			Sub-total	19	5,403	592	7,846	177,984		2,000
			Indian Service	28	3,002	5	5,815	456,252		1,500
				5	2,366	-	3,648	291,032		1,000
				15	2,315	15	3,416	62,752		500
	10	1,993		-	3,045	78,047		2,000		
	Sub-total	58	9,756	20	15,924	668,083		5,000		
	State Total	179	22,139	1,013	28,835	2,353,342		10,000		

(Cont'd)



Table 2A. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1947

State	Ownership Class	Forest	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total	
				Natural	Planted			3-Hour Man-days Used	
Wisconsin (Cont'd)	State & Private	Non-Fed. Public Private	All Workings (Cont'd)						
			19	5,962	974	28,065	272,870		1,959
			72	10,395	195	34,263	300,047		1,742
			91	16,357	1,169	62,328	572,917		3,699
State Total			109	26,357	1,169	94,028	1,609,782		12,103
Region	Forest Service	All Forests	125	9,821	3,725	30,584	730,733		7,237
			107	17,451	75	26,860	1,608,834		10,658
			76	8,804	1,325	36,486	540,861		4,131
			431	22,752	2,741	85,491	782,859		5,647
Sub Total			597	51,296	6,086	183,977	1,323,720		9,083
Region Total, All Workings			710	59,448	7,934	179,201	3,748,277		27,781

Table 3. Summary of Local Control by Ownership Classes and Operating Agencies,  
North Central Region, 1917

Ownership Class	Operating Agency	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total	
			Natural	Planted			3-Horned Man-Destroyed	Used
Forest Service	Bureau-State	11	Initial Working		4,203	51		
	Forest Service	41	397	333	8,273	355,051	2,831	
	Total	52	4,098	138	4,236	355,102	2,831	
	Indian Service	51	4,098	138	11,269	802,102	1,831	
Non-Fed. Public	Bureau-State	22	5,509	368	5,877	210,388	1,142	
	Bureau-Intermingled	9	400	-	400	72,335	50	
Private	Bureau-State	159	8,800	995	35,538	245,805	1,651	
	Bureau-Intermingled	15	1,175	150	3,034	49,758	326	
	Total	174	9,975	1,145	38,572	295,563	2,007	
	All Agencies	376	27,232	2,054	83,635	1,712,970	10,127	
Forest Service	Bureau-State	4	Second Working		747	3,606	41	
	Bureau-Intermingled	7	1,909	1	3,486	103,183	1,039	
	Forest Service	30	2,641	686	7,009	163,444	1,514	
	Total	13	4,540	33	11,542	270,220	2,611	
Indian Service	Indian Service	20	3,226	1	4,541	274,000	2,232	
	Bureau-State	12	1,940	33	5,717	102,563	50	
Non-Fed. Public	Bureau-State	185	6,328	1,212	27,766	301,774	2,283	
	Bureau-Intermingled	29	3,429	185	10,028	68,223	534	
Total	214	9,757	1,397	37,794	389,997	2,817		
All Agencies	All Agencies	307	15,093	2,150	59,647	996,408	8,739	

(Cont'd)



Table 3. (Cont'd) Summary of Local Control by Ownership Classes and Operating Agencies,  
North Central Region, 1947

Ownership Class	Operating Agency	Number Areas	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Man-Days Used
			Natural	Planted			
Forest Service	Bureau-State	2	-	212	753	13	2
	Bureau-Intermingled	2	60	-	120	1,452	14
	Forest Service	29	786	2,081	5,773	103,933	1,736
	Total	33	846	2,293	6,646	105,398	1,752
Indian Service	Indian Service	36	7,842	-	10,727	650,552	16,781
Non-Fed. Public Private	Bureau-State	13	1,373	536	1,121	136,050	1,516
	Bureau-State	35	2,203	153	6,705	76,282	652
	Bureau-Intermingled	8	817	16	2,420	41,017	165
	Total	125	13,020	169	2,125	117,839	835
All Agencies		125	13,103	3,080	90,919	1,009,892	8,591
Forest Service	Bureau-State	17	397	817	5,703	3,670	90
	Bureau-Intermingled	9	1,969	1	3,606	104,635	1,073
	Forest Service	100	7,525	2,905	21,055	622,428	6,151
	Total	126	9,891	3,723	30,364	760,733	7,214
Indian Service	Indian Service	107	17,301	78	26,760	1,681,831	10,575
Non-Fed. Public	Bureau-State	67	8,444	1,325	35,928	468,526	3,873
	Bureau-Intermingled	9	400	-	558	72,335	52
	Total	76	8,844	1,325	36,486	540,861	4,425
Private	Bureau-State	379	17,331	2,390	70,009	625,861	4,822
	Bureau-Intermingled	52	5,421	351	15,482	153,998	1,023
Total		431	22,752	2,741	85,491	779,859	5,847
All Agencies		763	53,446	1,841	179,207	2,700,477	27,261



Table B. Results of Checkings After Ribes Bradication by Bureau and Ownership Classifications,  
North Central Region, 1947

Ownership Class	Checking After Eradication				Classification of Worked Areas on Basis of Ribes F.L.S. per Acre				Percent Acreage Showing FLS of per Acre After
	Number of Areas	Acres Worked and Checked	Strip Acres	Ribes Bushes	Ribes Found F.L.S.	Remaining After Eradication			
						Ribes per Acre Bushes F.L.S.		Acres	
						0.0-15.0 FLS	15.1-25.0 FLS		
Acres									
Non-Fed. Public	3	182	5.00	11	45.1	2.2	9.0	182	100.0
Illinois									
Non-Fed. Public	1	110	1.00	1	4.0	1.0	4.0	110	100.0
Private	22	2,045	27.60	146	260.0	5.3	9.4	1,746	97.5
Total	23	2,155	28.60	147	264.0	5.1	9.2	1,856	98.5
Indiana									
Non-Fed. Public	4	578	11.60	166	174.0	14.3	15.0	310	100.0
Private	48	465	10.00	157	149.0	15.7	14.9	251	100.0
Total	52	1,043	21.60	323	323.0	15.0	15.0	561	100.0
Iowa									
Non-Fed. Public	1	130	1.00	-	-	-	-	130	100.0
Private	96	6,845	138.70	235	927.0	1.7	6.7	6,445	95.1
Total	97	6,975	139.70	235	927.0	1.7	6.6	6,575	95.1
Ohio									
Forest Service	60	15,702	316.90	674	920.0	2.1	2.9	14,460	100.0
Non-Fed. Public	15	2,761	63.20	81	131.9	1.3	2.1	2,761	100.0
Private	132	34,852	708.50	796	1,294.2	1.1	1.8	34,532	100.0
Total	207	53,315	1,088.60	1,551	2,346.1	1.4	2.2	51,753	100.0
Michigan									
Forest Service	33	3,856	123.74	508	1,172.2	4.1	9.5	3,296	92.6
Indian Service	24	5,873	146.42	353	458.8	2.4	3.1	5,181	96.5
Non-Fed. Public	9	1,018	27.60	67	163.5	2.4	5.9	879	100.0
Total	66	10,747	297.76	928	1,794.5	3.1	6.0	9,356	95.5
Minnesota									

(Cont'd)



Table 4. (Cont'd) Results of Checking After Ribes Eradication by States and Ownership Classes, North Central Region, 1947

Ownership Class	Checking After Eradication				Classification of Worked Areas on Basis of Ribes F.L.S. per Acre				Percent Average Shrubland FLS or Less per Acre After Eradication		
	Number of Areas	Acres Worked and Checked	Strip Acres	Ribes Bushes	Ribes Found F.L.S.	Ribes per Acre Bushes	F.L.S.	Remaining After Eradication			
								0.0-15.0 FLS Acres		15.1-25.0 FLS Acres	Over 25.0 FLS Acres
Forest Service	15	7,066	135.70	301	657.5	2.2	4.8	6,766	300	-	100.0
Indian Service	22	9,333	100.80	462	978.5	4.6	9.7	8,336	947	-	100.0
Non-Fed. Public	8	25,650	515.40	662	1,554.8	1.3	3.0	25,650	-	-	100.0
Private	44	29,435	569.50	954	2,708.7	1.7	4.8	29,347	88	-	100.0
Total	89	71,484	1,321.40	2,379	5,899.5	2.5	6.5	71,347	1,335	-	100.0
Forest Service	108	26,624	576.34	1,483	2,749.7	2.6	4.8	24,522	1,816	286	98.9
Indian Service	46	15,206	247.22	815	1,437.3	3.3	5.8	13,567	1,453	186	99.3
Non-Fed. Public	40	30,429	624.80	988	2,073.3	1.6	3.3	30,022	407	-	100.0
Private	342	73,642	1,454.30	2,288	5,338.9	1.6	3.7	72,321	980	341	99.5
Region Total	596	145,901	2,902.66	5,574	11,599.2	1.9	6.0	140,432	4,255	813	99.9

Note: There were 179,201 acres worked in 1947. The 30,870 acres not included as checked in Table 4 were given an administrative but not quantitative check after working and found satisfactory, or else were found to be ribes-free areas.

Table 5. Control Area Permits, North Central Region, 1947

State	Season 1947	Number Applications Received	Number Control Area Permits Approved	Number Applications		Percent Applications Approved	Applicants Number Used
				Rejected	Voluntarily Cancelled by Applicant		
Michigan	Spring	237	122	10	74	51.4	3.0
	Spring	174	161	3	10	92.5	11.0
	Fall	12	12	-	-	100.0	2.0
	Total	423	295	13	84	69.8	16.0
Ohio	Spring	42	20	22	-	47.6	1.0
	Fall	10	5	5	-	50.0	1.0
	Total	52	25	27	-	48.1	2.0
Wisconsin	Spring	305	225	40	30	73.8	5.0
	Fall	17	16	1	-	94.1	0.2
	Total	322	241	41	30	74.8	5.2
Region	Spring	738	609	75	74	82.5	23.0
	Fall	39	33	6	-	84.6	3.2
	Total	777	642	81	74	83.6	26.2



Tables 6 and 7. Status of Control by States and Ownership Classes,  
North Central Region, December 31, 1947

Net Acres

Ownership Class	Acres Total Control Problem					Acres Initially Worked					Acres Not Initially Worked					Acres on Maintenance	
	Natural		Planted		Total	Natural		Planted		Total	Natural		Planted		Total	White Pine	Control Area
	White Pine	Pine	White Pine	Pine		White Pine	Pine	White Pine	Pine		White Pine	Pine	White Pine	Pine			
Illinois																	
Non-Fed. Public	197	914	1,111	6,326	192	912	1,104	6,212	7	114	543	1,115	58	1,115	1,115	1,115	1,115
Private	34	778	812	7,060	34	722	756	4,945	56	2,115	58	2,115	58	2,115	2,115	2,115	2,115
Total	231	1,692	1,923	13,386	226	1,634	1,860	11,157	63	2,229	601	2,229	601	2,229	2,229	2,229	2,229
Indiana																	
Forest Service	-	18	18	179	-	18	18	179	-	-	18	-	18	-	-	18	18
Non-Fed. Public (a)	99	2,388	2,487	17,919	99	2,335	2,434	16,573	53	1,346	1,493	1,346	1,493	1,346	1,346	1,346	1,346
Private	228	5,834	6,062	170,498	227	4,448	4,675	60,856	1,387	109,642	3,704	109,642	3,704	109,642	109,642	109,642	109,642
Total	327	8,240	8,557	188,596	326	6,801	7,127	77,608	1,440	110,988	5,215	110,988	5,215	110,988	110,988	110,988	110,988
Iowa																	
Indian Service	-	45	45	500	-	45	45	500	-	-	-	-	-	-	-	-	-
Non-Fed. Public	347	206	553	3,368	347	205	552	3,348	1	20	11	20	11	20	20	20	20
Private	365	4,882	5,247	46,133	307	2,460	2,767	30,205	2,480	15,928	1,582	15,928	1,582	15,928	15,928	15,928	15,928
Total	712	5,133	5,845	50,001	654	2,710	3,364	34,053	2,481	15,948	1,593	15,948	1,593	15,948	15,948	15,948	15,948
Ohio																	
Forest Service	-	520	520	4,341	-	514	514	4,029	6	312	514	312	514	312	312	312	312
Non-Fed. Public (b)	798	5,679	6,477	55,874	796	4,077	4,873	40,305	1,604	15,569	1,229	15,569	1,229	15,569	15,569	15,569	15,569
Private	2,286	10,947	13,233	410,484	2,174	6,658	8,832	139,636	4,401	270,848	2,785	270,848	2,785	270,848	270,848	270,848	270,848
Total	3,084	17,146	20,270	470,699	2,970	11,249	13,349	182,970	6,011	286,729	4,538	286,729	4,538	286,729	286,729	286,729	286,729
Michigan																	
Forest Service	24,444	32,575	57,019	152,992	23,302	32,104	55,406	147,777	1,613	5,215	32,505	5,215	32,505	5,215	5,215	5,215	5,215
Non-Fed. Public	15	-	15	120	15	-	15	120	-	-	-	-	-	-	-	-	-
Private	99,158	31,448	130,606	314,324	94,741	30,217	124,958	235,581	5,049	20,980	51,003	20,980	51,003	20,980	20,980	20,980	20,980
Total	123,617	64,023	187,640	477,436	118,058	62,321	180,379	383,478	6,672	26,195	83,508	26,195	83,508	26,195	26,195	26,195	26,195

(Cont'd)



Tables 6 and 7. (Cont'd) Status of Control by States and Ownership Classes,  
North Central Region, December 31, 1947  
Net Acres

Ownership Class	Acres Total Control Problem				Acres Initially Worked				Acres Not Initially Worked				Acres on Maintenance	
	Natural Planted		Total		Natural		Total		White Pine		Control Area		White Pine	Control Area
	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	Control Area	Control Area	White Pine	Control Area
Minnesota														
Forest Service	89,476	5,901	95,377	157,914	30,386	5,901	36,787	57,269	58,590	100,645	10,032	17,45		
Indian Service	21,306	384	21,690	32,665	21,286	384	21,670	32,622	20	43	12,738	17,55		
Non-Fed. Public	46,753	14,720	61,473	123,798	32,928	5,971	38,399	76,262	22,574	47,536	12,310	23,39		
Private	87,623	390	88,013	276,489	67,122	388	67,510	207,067	20,503	69,422	15,080	36,07		
Total	245,158	21,395	266,553	590,866	152,222	12,644	164,066	575,220	101,687	217,646	50,160	94,128		
Wisconsin														
Forest Service	17,956	11,098	29,054	65,529	17,354	10,826	28,180	62,344	874	3,185	10,722	20,83		
Indian Service	39,392	697	40,089	76,059	35,516	697	36,213	67,047	3,876	9,812	14,826	27,35		
Non-Fed. Public	76,671	16,023	92,694	261,985	73,596	15,584	89,180	249,700	3,514	12,285	37,397	106,85		
Private	260,457	7,521	267,978	1,033,748	202,062	6,311	208,373	757,900	59,605	275,848	65,339	221,65		
Total	394,476	35,339	429,815	1,438,121	328,528	33,418	361,946	1,136,991	67,869	301,130	128,784	376,70		
Region														
Forest Service	131,876	50,112	181,988	380,955	71,542	49,363	120,905	271,598	61,083	109,357	53,789	139,93		
Indian Service	60,698	1,126	61,824	110,024	56,802	1,126	57,928	100,169	3,896	9,855	27,564	44,91		
Nat. Park Service	15	-	15	120	15	-	15	120	-	-	-	-		
Non-Fed. Public	224,023	71,373	295,401	783,594	202,699	59,301	262,000	685,764	33,401	97,830	105,166	277,57		
Private	552,358	44,107	596,465	2,688,001	447,200	32,483	479,683	1,837,656	116,782	850,345	137,195	558,30		
Region Total	968,970	166,723	1,135,693	5,962,684	778,258	112,273	890,531	2,895,307	215,162	1,067,387	323,714	1,020,71		
Includes U. S. Army Lands as follows:														
(a)	-	42	42	354	-	37	37	202	5	152	37	202		
(b)	-	156	156	1,675	-	136	136	1,237	20	438	51	571		



Table 8. Summary of Local Control by States, Workings, and Ownership Classes,  
From Inception to December 31, 1947, North Central Region  
Gross Acres

State	Ownership Class	Acres White Pine Protected	Acres Worked	Initial Working	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average Per		Average No. Ribes Destroyed Per Man-Day
							Ribes	Man-Days	
Illinois 1932-1947	Forest Service	1	50	-	-	-	-	-	-
	Non-Federal Public	2,555	8,636	1,139,265	2,843	131.9	0.33	401	
	Private	756	11,236	360,115	1,027	32.1	0.09	351	
	Total	3,312	19,922	1,499,380	3,870	75.3	0.19	387	
Indiana 1933-1947	Forest Service	18	179	-	3	-	0.02	-	-
	Non-Federal Public	2,059	17,052	107,667	942	6.3	0.06	114	
	Private	6,530	70,202	328,867	2,958	4.7	0.04	111	
	Total	8,607	87,433	436,534	3,903	5.0	0.04	112	
Iowa 1933-1947	Indian Service	45	500	13,462	169	26.9	0.34	80	
	Non-Federal Public	600	3,991	629,675	5,898	157.8	1.48	107	
	Private	2,723	34,233	2,885,396	20,947	84.3	0.61	138	
	Total	3,368	50,724	3,228,533	27,014	91.1	0.70	131	
Ohio 1933-1947	Forest Service	514	4,029	56	13	Trace	Trace	4	
	Non-Federal Public	4,167	40,092	505,566	8,187	12.6	0.20	62	
	Private	10,804	160,213	2,035,832	24,624	12.7	0.15	83	
	Total	15,485	204,334	2,541,494	32,824	12.4	0.16	77	
Michigan 1928-1947	Forest Service	57,442	158,131	5,931,217	30,749	37.5	0.19	193	
	National Park Service	15	120	13	-	0.1	-	-	
	Non-Federal Public	137,005	444,740	21,034,666	89,431	50.7	0.22	235	
	Private	236,759	733,866	38,282,550	158,752	52.2	0.22	241	
Total	433,261	1,366,957	65,258,486	279,932	49.9	0.21	234		
Minnesota 1917-1947	Forest Service	39,874	78,494	9,211,365	40,014	117.4	0.51	230	
	Indian Service	21,783	33,877	10,550,404	20,191	311.4	0.60	323	
	Non-Federal Public	40,565	86,308	10,803,313	39,504	125.2	0.46	275	
	Private	70,149	219,272	31,064,611	63,679	141.7	0.29	188	
Total	172,371	447,951	61,629,693	163,388	147.5	0.39	377		

(Continued)



Table 3. (Cont'd) Summary of Local Control by States, Territory, and Ownership Classes,  
From Inception to December 31, 1947, North Central Region  
GROSS ACRES

State	Ownership Class	Acres White Pine Protected	Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average Per		Average Ribes Destroyed Per Man-Day
						Ribes	Acres Worked	
Wisconsin 1920-1947	Forest Service	28,471	Initial Working 67,998	4,900,176	30,663	72.1	0.45	160
	Indian Service	40,663	75,511	20,500,927	66,014	271.5	0.87	311
	Non-Federal Public	92,583	270,812	11,304,671	47,619	44.7	0.18	237
	Private	216,737	815,377	50,307,759	213,138	61.7	0.27	231
	Total	370,154	1,229,698	87,013,533	368,134	70.8	0.29	240
Region 1917-1947	Forest Service	126,020	308,981	20,042,814	101,442	64.9	0.33	190
	Indian Service	62,491	109,888	31,064,793	86,374	282.7	0.79	360
	National Park Service	15	120	13	-	Trace	-	-
	Non-Federal Public	279,534	341,631	45,524,823	194,424	54.1	0.23	234
	Private	544,458	2,044,399	125,265,130	490,125	61.3	0.24	256
Region Total, Initial		1,012,518	3,304,919	221,897,573	872,365	61.1	0.26	254
Illinois 1936-1947	Non-Federal Public	1,903	7,104	560,537	2,150	78.9	0.30	261
	Private	382	3,079	49,505	362	16.1	0.12	137
	Total	2,285	10,183	610,042	2,512	99.9	0.25	242
	Non-Federal Public	1,478	7,907	17,667	226	2.2	0.03	78
	Private	1,846	11,185	74,512	809	6.7	0.07	92
Iowa 1936-1947	Total	3,324	19,092	92,179	1,035	4.8	0.09	89
	Indian Service	10	206	3,592	57	17.4	0.28	65
	Non-Federal Public	276	1,868	309,452	2,144	165.7	1.15	144
	Private	701	4,965	328,368	2,739	66.1	0.56	116
	Total	987	7,039	641,412	4,900	91.1	0.71	129
Ohio 1936-1947	Non-Federal Public	1,934	17,308	321,366	7,137	18.0	0.46	49
	Private	2,986	25,503	398,323	5,124	15.6	0.20	78
	Total	4,920	43,311	719,689	12,261	16.6	0.28	58

(Cont'd)



Table 8. (Cont'd) Summary of Local Control by States, Workings, and Ownership Classes,  
From Inception to December 31, 1947, North Central Region  
Gross Acres

State	Ownership Class	Acres White Pine Protected	Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average Per Acre Worked		Average No. Ribes Destroyed Per Man-Day
						Ribes	Man-Days	
Michigan 1932-1947	Forest Service	24,873	57,849	1,066,874	10,116	18.4	0.17	105
	Non-Federal Public	40,356	107,938	2,393,685	15,257	22.2	0.14	157
	Private	85,004	242,917	4,623,874	28,557	19.0	0.12	162
	Total	150,233	408,704	8,084,433	53,930	19.8	0.13	150
Minnesota 1933-1947	Forest Service	15,511	25,103	1,385,763	10,856	55.2	0.43	128
	Indian Service	16,545	22,470	2,343,215	10,400	104.3	0.46	225
	Non-Federal Public	12,837	20,862	1,175,586	7,375	56.4	0.35	159
	Private	14,013	45,766	2,701,530	11,549	59.0	0.25	234
Wisconsin 1934-1947	Forest Service	22,649	40,792	929,925	10,120	66.6	0.35	189
	Indian Service	17,419	34,606	3,064,186	20,307	22.8	0.27	86
	Non-Federal Public	34,790	82,417	1,196,418	10,002	88.5	0.59	151
	Private	66,049	226,467	3,550,140	30,319	14.5	0.12	120
Region 1932-1947	Forest Service	63,035	123,744	3,382,562	31,817	22.7	0.19	122
	Indian Service	33,974	57,282	5,410,993	30,764	27.3	0.26	106
	Non-Federal Public	93,574	245,904	5,974,711	44,341	94.5	0.54	176
	Private	170,981	559,832	11,726,252	79,509	24.3	0.18	155
Regional Total, Second		504,522	986,012	26,494,538	186,431	20.9	0.14	147
						26.8	0.19	142
Illinois 1940-1947	Non-Federal Public	1,904	7,669	158,360	2,868	59.8	0.37	160
	Private	852	4,955	75,636	641	15.3	0.13	118
	Total	2,756	12,624	233,996	3,509	62.3	0.29	152

(Cont'd)



Table 8- (Cont'd) Summary of Local Control by States, Workings, and Ownership Classes:  
From Inception to December 31, 1947, North Central Region  
Gross Acres

State	Ownership Class	Acres White Pine Protected	Acres Worked	Number of Ribes Destroyed	Total 3-Hour Man-Days	Average Per		Average No. Ribes Destroyed Per Man-Day
						Ribes	Acre Worked	
Third and Other Workings (Cont'd)								
Indiana 1941-1947	Non-Federal Public	611	3,190	14,784	212	4.6	0.07	70
	Private	222	2,655	9,957	50	3.8	0.02	199
	Total	833	5,845	24,741	262	4.2	0.04	94
Iowa 1940-1947	Non-Federal Public	261	850	87,166	861	102.5	1.01	101
	Private	30	358	22,921	207	64.0	0.58	111
	Total	291	1,208	110,087	1,068	91.1	0.88	107
Ohio 1940-1947	Non-Federal Public	1,231	3,762	6,137	280	1.6	0.07	22
	Private	1,724	10,361	163,793	2,133	15.8	0.21	77
	Total	2,955	14,123	169,930	2,413	12.0	0.17	70
Michigan 1937-1947	Forest Service	5,843	13,811	121,369	2,067	8.8	0.15	59
	Non-Federal Public	8,655	20,236	274,402	2,120	13.6	0.10	129
	Private	13,437	40,010	634,657	5,047	15.9	0.13	126
Minnesota 1937-1947	Total	27,935	74,057	1,030,128	9,234	13.9	0.12	118
	Forest Service	5,691	10,077	332,730	3,000	33.0	0.30	111
	Indian Service	8,064	11,426	640,463	5,092	56.1	0.45	126
Wisconsin 1938-1947	Non-Federal Public	4,268	5,378	296,874	2,064	55.2	0.38	144
	Private	295	847	42,820	291	50.6	0.34	147
	Total	4,563	6,225	339,694	2,355	47.3	0.38	126
Region 1937-1947	Forest Service	13,872	27,667	522,897	7,852	18.2	0.41	45
	Indian Service	12,187	19,053	1,226,658	9,103	76.9	0.53	146
	Non-Federal Public	18,391	44,146	1,251,103	9,655	37.0	0.41	91
Region Total, Third	Private	21,812	75,118	1,074,125	9,417	7.8	0.07	119
	Total	66,242	165,984	4,074,733	34,735	29.4	0.26	114
						18.9	0.24	79
						64.4	0.48	135
						28.3	0.22	130
						14.3	0.13	114
						24.5	0.23	117

(Cont'd)



Table 8. (Cont'd) Summary of Local Control by States, Workings, and Ownership Classes,  
From Inception to December 31, 1947, North Central Region  
Gross Acres

State	Ownership Class	Acres White Pine Protected	Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average per Acre Worked		Average No. Ribes Destroyed Per Man-Day
						Ribes	Man-Days	
Illinois 1932-1947	Forest Service	1	50	-	-	-	-	-
	Non-Federal Public	6,362	23,409	2,153,162	7,861	92.2	0.34	275
	Private	1,990	19,268	485,256	2,030	25.2	0.11	239
	Total	8,352	42,727	2,638,418	9,891	61.9	0.23	267
Indiana 1933-1957	Forest Service	18	179	-	3	-	0.02	-
	Non-Federal Public	4,148	28,149	140,118	1,380	5.0	0.05	102
	Private	8,598	84,042	413,336	3,817	4.9	0.05	108
	Total	12,764	112,370	553,454	5,200	4.9	0.05	106
Iowa 1933-1947	Indian Service	55	706	17,054	226	24.2	0.32	75
	Non-Federal Public	1,137	6,709	1,026,293	8,903	153.0	1.33	115
	Private	3,454	39,556	3,236,685	23,943	81.8	0.61	135
	Total	4,646	46,971	4,280,032	33,072	91.1	0.70	129
Ohio 1933-1947	Forest Service	514	4,029	56	13	Trace	Trace	4
	Non-Federal Public	7,332	61,662	833,069	15,654	13.5	0.25	53
	Private	15,514	196,077	2,597,948	31,881	13.2	0.16	81
	Total	23,360	261,768	3,431,073	47,548	13.1	0.18	72
Michigan 1928-1947	Forest Service	87,858	229,791	7,119,460	42,932	31.0	0.19	166
	National Park Service	15	120	13	-	0.1	-	-
	Non-Federal Public	186,016	542,914	23,702,753	106,808	43.7	0.20	222
	Private	335,200	1,016,793	43,541,081	192,356	42.8	0.19	226
Minnesota 1917-1947	Total	609,089	1,789,618	71,363,307	242,096	41.6	0.19	217
	Forest Service	61,076	113,674	10,929,858	53,870	96.2	0.47	203
	Indian Service	46,392	67,773	13,534,082	35,683	199.7	0.53	379
	Non-Federal Public	57,670	112,548	12,275,773	48,943	109.1	0.43	251
Total	Private	84,457	265,885	33,808,961	75,519	127.2	0.28	448
	Total	249,595	559,080	79,948,674	244,015	334.8	0.38	330

(Cont'd)

Table 8. (Cont'd) Summary of Local Control by States, Workings, and Ownership Classes,  
From Inception to December 31, 1947, North Central Region  
Gross Acres

State	Ownership Class	Acres White Pine Protected	Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average Per		Average No. Ribes Destroyed Per Man-Day	
						Acres Worked	Man-Days		
									Ribes
Wisconsin 1920-1947	All Workings (Cont'd)								
	Forest Service	53,458	112,569	5,898,899	43,051	52.4	0.38	137	
	Indian Service	62,205	117,744	24,151,308	90,332	205.1	0.77	267	
	Non-Federal Public	128,834	356,290	12,614,469	58,871	35.4	0.17	214	
	Private	288,038	1,057,778	53,982,240	249,505	51.0	0.24	216	
Region 1917-1947	Total	532,535	1,644,381	96,646,916	441,759	58.8	0.27	218	
	Forest Service	202,925	460,292	23,948,273	139,869	52.0	0.30	171	
	Indian Service	108,652	186,223	37,702,444	126,241	202.5	0.68	299	
	National Park Service	15	120	13	-	0.1	-	-	
	Non-Federal Public	391,499	1,131,681	52,750,637	248,420	46.6	0.22	212	
Region Total, All Workings	Private	737,251	2,679,399	138,065,507	579,051	51.5	0.22	238	
		1,440,342	4,457,715	252,466,874	1,093,581	56.6	0.25	231	



Table 8A. Summary of Ribes Eradication, All Workings, by States, Ownership Classes, and Operating Agencies, 1917 to 1947, North Central Region  
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average Per		Average No. Ribes Destroyed Per Man-Day
					Acre Worked	Man-Days	
					Ribes	Man-Days	
Illinois							
Forest Service	Bureau-State	50	-	-	-	-	-
Non-Federal Public	Bureau-State	23,409	2,158,162	7,861	92.2	0.34	275
Private	Bureau-State	19,268	485,255	2,030	25.2	0.11	239
Total, State		42,727	2,643,418	9,891	62.9	0.23	267
Indiana							
Forest Service	Bureau-State	179	-	3	-	0.02	-
Non-Federal Public	Bureau-State	28,119	140,118	1,380	5.0	0.05	102
Private	Bureau-State	84,012	413,336	3,817	4.9	0.05	108
Total, State		112,370	553,454	5,200	4.9	0.05	106
Iowa							
Indian Service	Indian Service	706	17,074	226	24.2	0.32	75
Non-Federal Public	Bureau-State	6,709	1,026,293	8,003	153.0	1.33	115
Private	Bureau-State	32,556	3,276,655	23,943	81.8	0.61	135
Total, State		46,971	4,290,032	33,072	91.1	0.70	129
Ohio							
Forest Service	Bureau-State	4,029	56	13	Trace	Trace	4
Non-Federal Public	Bureau-State	61,662	833,069	15,084	15.5	0.25	59
Private	Bureau-State	196,077	2,597,943	31,991	13.3	0.16	81
Total, State		261,768	3,431,073	47,219	13.1	0.18	72

(Cont'd)



Table 8A. (Cont'd) Summary of Ribes Eradication, All Workings, by States, Ownership Classes, and Operating Agencies, 1917 to 1947, North Central Region  
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average Per Acre Worked		Average No. Ribes Destroyed Per Man-Day
					Ribes	Man-Days	
Michigan							
Forest Service	Bureau-State	69,495	822,055	3,689	11.8	0.05	223
	Bureau-Intermingled	1,538	85,396	433	55.5	0.28	197
	Forest Service	158,758	6,212,009	38,810	39.1	0.24	160
	Sub-total	229,791	7,119,460	42,932	31.0	0.19	166
National Park Service	Bureau-State	120	13	-	0.1	-	-
Non-Federal Public Private	Bureau-State	502,904	23,702,753	106,808	45.7	0.20	222
	Bureau-State	994,106	43,295,062	190,807	43.6	0.19	227
	Bureau-Intermingled	21,842	238,517	1,524	10.9	0.07	157
	Forest Service	845	7,502	25	8.9	0.03	300
	Sub-total	1,018,793	43,941,081	192,356	42.8	0.19	226
Total, State		1,789,618	74,363,307	342,096	41.6	0.19	217
Minnesota							
Forest Service	Bureau-State	20,855	2,415,503	7,125	115.8	0.34	339
	Forest Service	92,819	8,514,555	46,745	91.7	0.50	182
	Sub-total	113,674	10,929,858	53,870	96.2	0.47	203
Indian Service	Bureau-State	3,289	349,469	1,179	166.3	0.36	296
	Indian Service	64,484	13,184,613	34,504	204.5	0.54	382
	Sub-total	67,773	13,534,082	35,683	199.7	0.53	379
Non-Federal Public	Bureau-State	110,861	12,088,282	46,702	109.0	0.42	259
	Bureau-Intermingled	1,687	187,491	2,241	111.1	1.33	84
	Sub-total	112,548	12,275,773	48,943	109.1	0.63	251
Private	Bureau-State	265,835	33,808,961	75,519	127.2	0.28	448
Total, State		559,880	70,543,674	214,015	174.8	0.36	330

(Cont'd)



Table 8A. (Cont'd) Summary of Ribes Eradication, All Workings, by States, Ownership Classes, and Operating Agencies, 1917 to 1947, North Central Region  
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average Per		Average No. Ribes Destroyed Per Man-Day
					Ribes	Man-Days	
Wisconsin							
Forest Service	Bureau-State	19,556	503,553	2,994	25.7	0.15	168
	Bureau-Intermingled	9,726	169,426	2,327	17.4	0.24	73
	Forest Service	83,287	5,225,920	37,730	62.7	0.45	139
	Sub-total	112,569	5,898,899	43,051	52.4	0.38	137
Indian Service	Indian Service	117,744	24,151,308	90,332	205.1	0.77	267
Non-Federal Public	Bureau-State	355,533	12,601,324	58,669	35.4	0.17	215
	Bureau-Intermingled	757	13,145	202	17.4	0.27	65
	Sub-total	356,290	12,614,469	58,871	35.4	0.17	214
	Bureau-State	1,056,976	53,966,695	249,284	51.1	0.24	216
Private	Bureau-Intermingled	802	15,545	221	19.4	0.28	70
Sub-total		1,057,778	53,982,240	249,505	51.0	0.24	216
Total, State		1,644,381	96,646,916	441,759	58.8	0.27	218
Region							
Forest Service	Bureau-State	114,164	3,741,167	13,824	32.8	0.12	271
	Bureau-Intermingled	11,264	254,822	2,760	22.6	0.25	92
	Forest Service	334,864	19,952,284	123,285	59.6	0.37	162
	Sub-total	460,292	23,948,273	139,869	52.0	0.30	171
Indian Service	Bureau-State	3,289	349,469	1,179	106.3	0.36	296
	Indian Service	182,934	37,352,975	125,062	204.2	0.68	299
	Sub-total	186,223	37,702,444	126,241	202.5	0.68	299
	National Park Service	Bureau-State	120	12	"	0.1	"
Non-Federal Public	Bureau-State	1,129,237	52,550,001	245,977	46.5	0.22	214
	Bureau-Intermingled	2,444	200,636	2,443	82.1	1.00	82
	Sub-total	1,131,681	52,750,637	248,420	46.6	0.22	212

(Cont'd)

Table 8A. (Cont'd) Summary of Ribes Eradication, All Workings, by States, Ownership Classes, and Operating Agencies, 1917 to 1947, North Central Region  
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average No. Ribes Destroyed Per Man-Day	
					Average Per Acre Worked	
					Ribes	Man-Days
Private		Region (Cont'd)				
	Bureau-State	2,655,910	137,803,943	577,281	51.9	0.22
	Bureau-Intermingled	22,644	254,062	1,745	11.2	0.08
	Forest Service	845	7,502	25	8.9	0.03
	Sub-total	2,679,399	138,065,507	579,051	51.5	0.22
Grand total, Region		4,437,715	232,466,874	1,095,581	56.6	0.25
						231



Table 9. Summary of Nursery Sanitation, North Central Region, 1947

Name and Ownership of Nursery	Operating Agency	Working	White Pine		Acres Protected	Acres Worked	Ribes		Man- Days Used
			Trees In Nurseries				Cult.	Destroyed Wild	
Ohio									
S.C.S., Federal	Bureau-State	Fifth	1,375,000		87	408	-	35	3
Henry Kohankle, Private	Bureau-State	Sixth	1,800		45	450	-	5	3
J. Jenkins, Private	Bureau-State	Eighth	3,000		8	196	-	3	3
Total			1,379,800		140	1,054	-	43	9
Michigan									
Chittenden, Forest Service	Forest Service	Tenth	3,000,000		60	570	-	104	27
Wisconsin									
Hayward, State	Bureau-State	Sixth	1,520,000		73	502	9	698	10
Region									
Region Total	5 Bureau-State		6,199,800		273	2,126	9	875	76

Table 10. Cultivated Black Currant Elimination, North Central Region, 1947

State	Found		Destroyed		Man-Days Used
	Plantings	Plants	Plantings	Plants	
Iowa	-	-	3	18	1
Minnesota	1	3	1	3	-
Region Total	1	3	4	21	1

Table 11. Cumulative Cultivated Black Currant Elimination, North Central Region, to December 31, 1947

State	Number of Inspections	Found		Destroyed		Total Man-Days Used	Plantings Found per 1,000 Inspections
		Plantings	Plants	Plantings	Plants		
Illinois	48,067	532	4,171	60	761	*	11.1
Indiana	64,226	5	20	3	15	*	0.2
Iowa	318,396	1,606	7,274	1,587	7,204	6,525	5.0
Ohio	1,845,970	8,838	75,605	8,406	73,117	25,791	4.8
Michigan	980,634	14,927	147,839	14,860	147,185	40,092	15.2
Minnesota	211,664	3,261	23,309	3,261	23,309	12,001	15.4
Wisconsin	922,898	6,601	37,080	6,597	37,051	32,137	7.2
Region Total	4,391,855	35,770	295,298	34,774	288,642	116,546	8.1

\* - Work done in connection with other field activities such as: survey, local control, scouting for the rust.



Table 12. Federal Expenditures for All Blister Rust Control Projects,  
Milwaukee Office, Calendar Year 1947

Appropriation	Expenditure Class	Leadership and Coordination		Field Data	Total
Bureau 3101 January to June, 1947	Salaries	\$14,048.58		\$2,027.48	\$16,076.06
	Non-Salaries	3,716.18		718.48	4,434.66*
	Total	17,764.76		2,745.96	20,510.72
Bureau 3101 July to December, 1947	Salaries	12,974.84		1,771.84	14,746.68
	Non-Salaries	742.98		177.54	920.52
	Total	13,717.82		1,949.38	15,667.20
Bureau 3103 January to June, 1947	Salaries	-		-	-
	Non-Salaries	-		1,202.50**	1,202.50**
	Total	-		1,202.50**	1,202.50**
Total	Salaries	27,023.22		3,799.32	30,822.54
	Non-Salaries	4,459.16		2,098.52	6,557.68
Grand Total		31,482.38		5,897.84	37,380.22

\* - Includes a credit of \$188.02 of F.Y. 1946 funds for Mr. Kroeber's move, East Lansing, Michigan to Milwaukee, Wisconsin, charged against Milwaukee F.Y. 1946 funds, later paid by Washington.

\*\* - Cost of 1947 Pontiac Sedan assigned to Milwaukee Office.

Table 12A. North Central Region Expenditures, by State and Appropriation, Calendar Year 1947

Appropriation	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Illinukee Office	Total Region
State Indirect Aid January to June	\$300.00	\$250.00	\$450.00	\$400.00	\$750.00	\$1,300.00	\$3,800.00	-	\$7,250.00
State Indirect Aid July to December	300.00	270.00	450.00	402.00	675.00	1,400.00	3,800.00	-	7,297.00
State Direct Aid January to June	2,165.92	245.58	1,403.61	74.58	5,019.87	4,950.76	7,942.68	-	21,803.00
State Direct Aid July to December	1,929.32	169.00	1,579.37	60.00	4,382.03	4,523.50	13,774.66	-	26,417.80
<b>Sub-total, State</b>	<b>4,695.24</b>	<b>934.58</b>	<b>3,882.93</b>	<b>936.58</b>	<b>10,826.90</b>	<b>12,174.26</b>	<b>29,517.34</b>	<b>-</b>	<b>62,767.50</b>
<b>Bureau 3101</b>	<b>426.35</b>	<b>401.10</b>	<b>2,559.04</b>	<b>2,203.34</b>	<b>9,114.33</b>	<b>9,837.46</b>	<b>9,283.18</b>	<b>\$20,510.72</b>	<b>54,385.82</b>
January to June									
Bureau 3101 July to December	398.19	398.19	2,323.39	1,485.03	7,606.97	9,089.68	7,682.02	15,667.00	44,650.47
Bureau 3103, State & Private January to June	2,219.51	4,490.46a	8,058.68	10,766.16b	17,972.83d	30,685.44f	20,283.59g	1,202.50i	95,679.17
Bureau 3103, State & Private July to December	1,489.33	2,525.07	2,359.84	4,908.68	6,918.16	5,056.31	7,963.05	-	31,220.44
Bureau 3103, Intermingled January to June	-	-	-	-	7,993.41	22,232.34	5,892.05	-	36,117.80
Forest Service 3104 January to June	-	-	-	-	18,546.81	36,408.64	4,664.77	-	59,620.22
Forest Service 3104 July to December	-	-	-	-	5,898.53	47,656.70	4,478.00	-	58,033.23
Indian Service 3107 January to June	-	-	-	-	-	17,610.08	15,156.67	-	32,766.75
Indian Service 3107 July to December	-	-	-	-	-	20,831.10	20,966.24	-	41,797.34
Indian Service Tribal July to December	-	-	-	-	-	-	7,813.86	-	7,813.86
<b>Sub-total, Federal</b>	<b>4,533.38</b>	<b>7,614.82</b>	<b>15,300.95</b>	<b>19,363.21</b>	<b>74,021.04</b>	<b>199,407.75</b>	<b>104,183.73</b>	<b>37,329.22</b>	<b>462,065.13</b>

(Cont'd)



Table 12A. (Cont'd) North Central Region Expenditures, by State and Appropriation, Calendar Year 1947

Appropriation	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Milwaukee Office	Total Region
Sub-total, All Funds January to June	5,111.75	5,307.14	12,471.33	13,144.09	53,427.25	123,024.72	67,023.24	21,713.22	307,602.78
Sub-total, All Funds July to December	4,115.84	3,362.28	6,712.60	6,855.71	25,480.69	63,557.29	66,477.83	15,667.00	217,250.82
Grand Total	9,227.59	8,669.42	19,183.93	20,299.79	78,907.94	186,582.01	133,501.07	37,380.22	524,853.60

- a - Includes \$1.60 of F.Y. 1946 funds for aerial photographs.
- b - Includes \$17.00 of F.Y. 1946 funds for aerial photographs.
- c - Includes \$39.00 of F.Y. 1946 funds for aerial photographs erroneously charged to 3103 funds in 1946 Report.
- d - Excludes \$39.00 of F.Y. 1946 funds for aerial photographs erroneously charged to 3103 funds in 1946 Report.
- e - Excludes \$29.65 of F.Y. 1946 funds for telephone erroneously included in F.Y. 1946 Report.
- f - Includes \$43.54 of F.Y. 1946 funds for aerial photographs.
- g - Includes \$20.00 of F.Y. 1946 funds for aerial photographs.
- h - Includes a credit of \$188.02 of F.Y. 1946 funds for Mr. Kroeber's move, East Lansing, Michigan to Milwaukee, Wisconsin, charged against Milwaukee F.Y. 1946 funds, and included in 1946 report. Reimbursed by Washington.
- i - Cost of Pontiac 4-Door 1947 Sedan assigned to Milwaukee.

Table 12B. Total North Central Region Expenditures, Classified by State and Activity,  
Calendar Year 1947

Activity	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Region	Percent Each Activity
Leadership and									
Coordination(a)	\$3,329.41	\$2,242.57	\$4,114.54	\$6,035.96	\$16,615.29	\$36,943.31	\$29,367.78	\$98,648.86	18.8
Local Control	642.00	4,558.51	15,563.99 <sup>b</sup>	14,337.53	57,213.59	159,807.70	101,987.92 <sup>c</sup>	354,111.24	67.5
Nursery Sanitation	-	-	300.00	-	284.71	300.00	140.40	1,025.11	0.2
Canker Pruning	-	-	154.48	-	-	2,722.69	-	2,877.17	0.5
Surveys	2,898.62	2,527.60	-	1,361.89	2,545.02	10,175.54	3,927.60	23,436.27	4.5
Other Field Data(a)	2,758.56	108.53	396.61	268.94	14,768.45	19,186.51	7,246.73	44,734.33	8.5
Total (a)	9,628.59	9,437.21	20,529.62	22,004.32	91,427.06	229,135.75	142,670.43	524,832.93	100.0

a - Includes Milwaukee Office costs prorated to States on basis of total Federal expenditures in each State.

b - Includes \$26.40 as value of cultivated ribes destroyed.

c - Includes \$84.50 as value of cultivated ribes destroyed.



Table 12C. North Central Region Expenditures Classified by Appropriation and Activity, 1947

Source of Funds	Class of Expenditure	Leadership and Coordination	Local Control	Nursery Sanitation	Canker Pruning	Survey and Post-check	Other Field Data	Total	Percent Each Source of Funds
State and Private	Salaries	\$14,011.31	\$22,307.60	\$630.40	\$798.85	\$996.20	\$6,960.66	\$45,705.02	11.9
	Non-Salaries	9,035.41	4,229.71 <sup>a</sup>	161.92	-	252.38	3,383.14	17,062.86	
	Total	23,046.72	26,537.31	792.32	798.85	1,248.58	10,343.80	62,767.88	
Bureau 3101	Salaries	66,391.75	5,535.11	35.00	221.53	2,611.20	11,104.19	86,228.78	18.9
	Non-Salaries	9,210.39	697.82	18.39	36.12	823.38	2,001.41	12,787.51	
	Total	75,602.14	6,232.93	53.39	257.65	3,434.58	13,105.60	99,016.29	
Bureau 3103, State & Private	Salaries	-	59,549.36	-	744.33	8,676.85	5,350.15	74,320.69	24.2
	Non-Salaries	-	40,959.61	-	1,076.34	5,095.57	5,447.40	52,578.92	
	Total	-	100,508.97	-	1,820.67	13,772.42	10,797.55	126,609.61	
Bureau 3103, Intermingled	Salaries	-	22,575.48	-	-	1,941.64	4,205.76	28,722.88	6.0
	Non-Salaries	-	5,122.22	-	-	735.36	1,537.34	7,394.92	
	Total	-	27,697.70	-	-	2,677.00	5,743.10	36,117.30	
Forest Service 3104	Salaries	-	95,147.07	134.40	-	1,846.41	3,182.53	100,310.46	22.4
	Non-Salaries	-	17,033.47	45.00	-	151.28	113.24	17,342.99	
	Total	-	112,180.54	179.40	-	1,997.69	3,295.77	117,657.45	
Indian Service 3107 and Tribal Funds Region	Salaries	-	69,467.17	-	-	216.00	1,104.20	70,787.37	15.7
	Non-Salaries	-	11,486.62	-	-	60.00	43.96	11,590.58	
	Total	-	80,953.79	-	-	276.00	1,148.16	82,377.95	
Region Total	Salaries	80,403.06	274,581.79	799.80	1,784.71	16,318.30	32,207.54	406,075.20	100.0
	Non-Salaries	18,245.80	79,529.45	225.31	1,112.46	7,117.97	12,526.79	118,757.78	
	Total	98,648.86	354,111.24	1,025.11	2,897.17	23,436.27	44,734.33	524,832.98	

a - Includes \$110.90 value of cultivated ribes destroyed: \$84.50 from Wisconsin; \$26.40 from Iowa.

b - Includes Menominee (Wisconsin) Tribal funds: \$7,267.21 Salaries; \$546.65 Non-Salaries; \$7,813.86 Total.

Note: In Bureau Government subsisted camps in Minnesota, net wages (gross wages less board deductions of 50¢ per meal) are shown as a salary item. Food supplies for camps, \$4,388.45, was also considered a salary item. Board deductions amounted to \$3,895.10.

The high proportion of 3103 funds for non-salary purposes was chiefly due to the purchase of 26 automobiles costing \$27,300.72.



Table 13. Approximate Number of Persons Employed by Months and Agencies,  
North Central Region, 1947

Operating Agency	Number of Persons by Months												Av. per Mon.	
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		Total
Illinois														
State & Private	1.0	1.0	1.0	2.2	1.7	1.1	1.0	1.0	1.0	1.0	1.0	1.0	14.0	1.2
Bureau 3103	1.0	1.0	1.0	-	-	-	1.0	1.0	1.0	1.0	1.0	1.0	9.0	0.7
Total	2.0	2.0	2.0	2.2	1.7	1.1	2.0	2.0	2.0	2.0	2.0	2.0	23.0	1.9
Indiana														
Bureau 3103	1.0	1.0	1.0	1.0	2.0	3.0	6.0	1.2	1.0	1.0	0.7	-	19.9	1.7
Iowa														
State & Private	-	-	-	-	4.0	5.0	5.0	-	-	-	-	-	14.0	1.2
Bureau 3101	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0	1.0
Bureau 3103	1.6	1.7	1.9	5.0	12.1	15.8	5.2	5.2	1.2	1.3	1.0	1.0	53.0	4.6
Total	2.6	2.7	2.9	6.0	17.1	21.8	11.2	6.2	2.2	2.3	2.0	2.0	79.0	6.5
Ohio														
Bureau 3101	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0	1.0
Bureau 3103	2.0	2.0	2.0	4.4	9.6	21.9	15.5	2.0	2.0	2.0	2.0	2.0	67.4	5.6
Total	3.0	3.0	3.0	5.4	10.6	22.9	16.5	3.0	3.0	3.0	3.0	3.0	79.4	6.6
Michigan														
State & Private	0.5	2.0	2.5	3.0	3.0	6.5	3.0	6.0	2.0	2.0	2.5	3.0	36.0	3.0
Bureau 3101	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	48.0	4.0
Bureau 3103	7.0	6.0	5.5	6.0	21.1	54.7	19.2	1.0	1.0	1.0	1.0	1.0	124.5	10.4
F. S. 3104	-	-	-	-	20.0	71.0	5.0	1.0	1.0	1.0	0.5	-	99.5	8.3
Total	11.5	12.0	12.0	13.0	48.1	136.2	31.2	12.0	8.0	8.0	8.0	8.0	308.0	25.7
Minnesota														
State & Private	3.0	3.0	3.0	3.0	3.0	4.0	2.0	3.8	3.8	2.9	2.0	2.0	35.5	3.0
Bureau 3101	4.0	4.0	4.0	4.3	5.0	5.0	4.5	4.0	4.0	4.0	4.0	4.0	50.8	4.2
Bureau 3103	14.5	15.5	15.3	19.0	27.8	74.7	26.0	0.3	-	-	-	-	193.1	16.1
F. S. 3104	0.5	0.5	-	1.0	-	14.9	74.0	56.1	15.9	4.6	1.5	1.0	170.0	14.2

(Cont'd)



Table 13. (Cont'd) Approximate Number of Persons Employed by Months and Agencies,  
North Central Region, 1947

Operating Agency	Number of Persons by Months												Total	Ave. per Month
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		
I. S. 3107	1.0	2.0	2.0	2.0	17.2	61.3	53.5	57.2	21.7	2.0	2.0	2.0	223.9	18.6
Total	23.0	25.0	24.3	29.3	53.0	159.9	160.0	121.4	45.4	13.5	9.5	9.0	673.3	56.1
Minnesota (Cont'd)														
State & Private	2.0	2.0	2.0	2.0	5.2	5.4	28.7	11.8	6.0	4.0	2.0	2.0	73.1	6.1
Bureau 3101	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	48.0	4.0
Bureau 3103	4.5	4.5	4.5	8.0	34.4	50.2	24.7	7.0	1.0	1.0	1.0	1.0	111.8	11.8
F. S. 3104	-	-	-	-	2.0	30.0	-	9.9	9.1	6.0	-	-	57.0	4.8
I. S. 3107	1.0	1.5	1.5	2.2	58.0	53.2	31.2	26.2	18.8	1.0	1.0	1.0	196.6	16.4
Indian Tribal	-	-	-	-	-	-	33.0	25.0	-	-	-	-	58.0	4.8
Total	11.5	12.0	12.0	16.2	105.6	112.8	121.6	83.9	38.9	16.0	8.0	9.0	574.5	47.8
Wisconsin														
State & Private	2.0	2.0	2.0	2.0	5.2	5.4	28.7	11.8	6.0	4.0	2.0	2.0	73.1	6.1
Bureau 3101	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	48.0	4.0
Bureau 3103	4.5	4.5	4.5	8.0	34.4	50.2	24.7	7.0	1.0	1.0	1.0	1.0	111.8	11.8
F. S. 3104	-	-	-	-	2.0	30.0	-	9.9	9.1	6.0	-	-	57.0	4.8
I. S. 3107	1.0	1.5	1.5	2.2	58.0	53.2	31.2	26.2	18.8	1.0	1.0	1.0	196.6	16.4
Indian Tribal	-	-	-	-	-	-	33.0	25.0	-	-	-	-	58.0	4.8
Total	11.5	12.0	12.0	16.2	105.6	112.8	121.6	83.9	38.9	16.0	8.0	9.0	574.5	47.8
Milwaukee Office														
Bureau 3101	9.7	10.3	9.8	9.3	8.5	3.8	6.0	8.0	3.0	8.0	6.0	7.1	103.5	8.6
State & Private	6.5	8.0	8.5	10.2	16.9	22.0	39.7	22.6	12.8	9.9	7.5	8.0	172.6	14.4
Bureau 3101	23.7	24.3	23.8	23.6	23.5	23.8	22.5	22.0	22.0	22.0	22.0	21.1	274.3	22.9
Bureau 3103	31.6	31.7	31.2	43.4	107.0	221.2	97.6	17.7	7.2	7.3	6.7	6.0	608.6	50.7
F. S. 3104	0.5	0.5	-	1.0	22.0	115.9	79.0	67.0	26.0	11.6	2.0	1.0	326.5	27.2
I. S. 3107	2.0	3.5	3.5	4.2	75.2	114.5	84.7	83.4	40.5	3.0	3.0	3.0	420.5	35.0
Indian Tribal	-	-	-	-	-	-	33.0	25.0	-	-	-	-	58.0	4.8
Region Total	64.3	60.0	67.0	82.4	244.6	497.4	356.5	237.7	104.5	93.8	61.8	39.2	1,850.5	155.0

Table 14. Current and Cumulative Summary of Canker Pruning,  
to December 31, 1947, North Central Region

State	Years Worked	Number Areas Treated	Number Trees Examined	Number Trees Treated	Number Trees Removed	Number Cankers Removed	Number Man-Days Used
Indiana	1947	2	800	2	-	1	-
Iowa	1945-1946	21	21,502	291	400	1,134	26
	1947	7	5,445	202	219	481	11
Ohio	1945-1947	28	26,907	193	619	1,615	37
	1946-1946	4	1,305	43	13	125	15
	1947	1	1	1	-	1	-
Michigan	1941-1947	5	1,206	44	13	126	15
Minnesota	1934-1946	246	776,565	41,476	891	101,468	3,209
	1933-1946	150	257,839	19,740	1,349	45,367	1,257
	1947	6	6,217	5,939a	35	4,934	112
Region	1933-1947	156	264,056	25,679	1,334	20,301	1,335
	1933-1946	521	1,057,211	61,550	2,053	118,094	4,507
	1947	16	12,463	6,144	254	5,420	123
Region total		57	1,069,614	67,694	2,307	153,544	1,650

a - Crop trees pruned, including 260 trees found infected.



Calendar Year Series

TABLE 1 - SHEET 1

SUMMARY OF RIBES ERADICATION BY STATES AND OPERATING AGENCIES - 1947

NORTH CENTRAL REGION

State	Operating Agency	First Working			Second Working			Other Workings		
		Acres		Total Acres	Ribes Destroyed		Man-Days	Acres		Man-Days
		Without Ribes	With Ribes		Ribes	Destroyed		Ribes Destroyed	Destroyed	
Illinois	Bureau-State	27	102	129	12,975	54	-	30	1,947	2
	Bureau-State	2,103	1,720	3,823	59,060	100	1,043	870	6,784	50
	Bureau-State	-	124	124	55,472	124	577	133	1,004	100
	Bureau-State	2,150	2,194	4,344	21,232	256	3,943	709	3,693	90
Michigan	Bureau-State	-	8,463	8,463	77,336	555	23,259	111,837	95,221	808
	Forest Service	-	5,145	5,145	208,390	985	4,034	105,778	8,499	269
	Total	-	13,608	13,608	285,726	1,540	27,293	217,615	1,047	1,077
Minnesota	Bureau-State	-	1,377	1,377	134,236	906	2,323	23,254	8,000	10
	Forest Service	-	1,721	1,721	121,253	1,563	617	29,396	74,179	1,032
	Indian Service	-	576	576	351,111	1,039	2,446	132,574	341,256	2,996
	Total	-	3,674	3,674	606,600	3,508	5,386	185,224	403,435	4,038
Wisconsin	Bureau-State	-	49,157	49,157	246,200	1,264	13,319	303,083	126,683	1,232
	Forest Service	-	1,407	1,407	25,408	283	2,358	28,270	21,255	435
	Indian Service	-	10,693	10,693	458,071	2,599	2,418	101,516	309,296	1,785
	Total	-	61,257	61,257	729,679	4,146	15,095	432,869	457,234	3,452
All States	Bureau-State	4,377	64,716	69,093	578,337	3,658	47,774	598,874	234,814	2,394
	Forest Service	-	8,273	8,273	355,051	2,831	7,009	163,444	103,933	1,736
	Indian Service	-	11,269	11,269	809,182	3,638	4,864	234,090	650,552	4,781
	Total	4,377	84,258	88,640	1,742,570	10,127	59,647	996,408	1,009,299	8,911



TABLE I - RIBES

## SUMMARY OF RIBES ERADICATION BY STATES AND OPERATING AGENCIES - 1947

## NORTH CENTRAL REGION

State	Operating Agency	All Workings				Per Acre		Number of Camps	Total Seasonal Employees
		Acres Without Ribes	Acres With Ribes	Total Acres	Ribes Destroyed	Man-Days			
							Ribes		
Illinois	Bureau-State	60	220	280	24,382	90	67.6	0.88	
Indiana	Bureau-State	2,203	3,476	5,679	65,105	202	13.9	0.09	
Iowa	Bureau-State	-	1,093	1,093	137,186	1,242	12.4	1.29	
Ohio	Bureau-State	2,120	9,081	11,201	43,502	1,099	7.1	0.09	
Michigan	Bureau-State	-	41,226	41,226	284,394	2,406	6.9	0.06	89
	Forest Service	-	12,089	12,089	322,667	1,924	26.7	0.16	130
	Total	-	53,315	53,315	607,061	1,530	11.0	0.08	219
Minnesota	Bureau-State	-	3,700	3,700	165,490	1,290	44.7	0.35	120
	Forest Service	-	4,361	4,361	224,828	2,997	51.6	0.69	177
	Indian Service	-	10,936	10,936	824,941	4,538	75.4	0.41	100
	Total	-	18,997	18,997	1,215,259	8,825	90.9	0.46	397
Wisconsin	Bureau-State	-	65,569	65,569	675,966	4,746	10.3	0.07	110
	Forest Service	-	4,605	4,605	74,933	1,240	16.3	0.27	43
	Indian Service	-	15,924	15,924	868,883	6,117	54.6	0.38	86
	Total	-	86,098	86,098	1,619,782	12,103	18.6	0.11	239
All States	Bureau-State	4,377	126,909	131,286	1,432,025	10,951	11.3	0.08	398
	Forest Service	-	21,055	21,055	622,428	6,161	29.6	0.29	350
	Indian Service	-	26,860	26,860	1,693,824	10,655	63.1	0.40	186
	Total	4,377	174,824	179,201	3,748,277	27,767	21.2	0.16	834

- Use Peak Season Employment.



TABLE I - SHEET 3

## SUMMARY OF RIBS ERADICATION BY FOREST SERVICE - 1947

## NORTH CENTRAL REGION

National Forests	Forest Acres					Ribs Destroyed					Second Working			Other Working		
	Acres without Ribs	Acres with Ribs	Total Acres	Ribs Destroyed	Man-Days	Acres Destroyed	Man-Days	Acres Destroyed	Man-Days	Acres Destroyed	Acres	Days	Acres	Acres	Days	Acres
Bureau, Michigan	-	-	-	-	-	70	318	6	-	-	-	-	-	-	-	-
Island Lake, Michigan	-	400	400	-	-	1,259	332	19	1,700	3,806	-	-	-	-	-	-
Marquette, Michigan	-	220	220	4,918	111	760	1,185	159	-	-	-	-	-	-	-	-
Manistee, Michigan	-	2,925	2,925	15,591	122	620	2,587	31	-	-	-	-	-	-	-	-
Oshtemo, Michigan	-	1,600	1,600	187,881	819	1,325	37,190	455	1,210	4,693	853	-	-	-	-	-
Superior, Minnesota	-	1,544	1,544	98,030	1,369	-	-	-	1,339	69,831	842	-	-	-	-	-
Chippewa, Minnesota	-	177	177	23,223	194	611	29,395	102	604	24,346	170	-	-	-	-	-
Chequamegon, Wisconsin	-	842	842	12,273	196	1,175	20,113	393	-	-	-	-	-	-	-	-
Presque Isle, Wisconsin	-	565	565	13,135	61	363	7,825	129	810	23,255	170	-	-	-	-	-

Total

Total

Total

Total

Total

Total

Total

Total

Total

Total

Total

TABLE 1 - FIRE  
SUMMARY OF RIBES ERADICATION BY FOREST SERVICE - 1947

National Forests	NORTH CENTRAL REGION									
	ACRES		W O R K E D		R I B E S		P E R A C R E		Number Of Camps	Total - Seasonal Employees
	Without Ribes	With Ribes	Total Acres	Destroyed	Ribes Days	Ribes Days	Ribes	Man- Days		
Baron, Michigan	-	70	70	918	6	13.1	0.09	-	-	6
Manistee, Michigan	-	3,359	3,359	4,444	55	1.2	0.02	-	-	5
Marquette, Michigan	-	980	980	9,403	203	9.6	0.21	-	-	14
Hewitt, Michigan	-	3,545	3,545	18,178	153	5.1	0.04	-	-	8
Oshtemo, Michigan	-	4,135	4,135	220,524	1,597	70.1	0.36	-	-	37
Superior, Minnesota	-	2,883	2,883	147,861	2,231	51.3	0.77	3		125
Chippewa, Minnesota	-	1,478	1,478	76,967	766	52.1	0.52	-	-	52
Congaree, Wisconsin	-	2,217	2,217	32,714	589	14.8	0.27	-	-	15
Nicolet, Wisconsin	-	2,388	2,388	42,219	651	17.7	0.27	-	-	30
<b>Total</b>	-	12,005	12,005	282,900	3,161	206	0.29	3		250

\* Use Peak Season Employment.



TABLE 1 - SHEET 7

## SUMMARY OF RIBES ERADICATION BY INDIAN SERVICE - 1947

## NORTH CENTRAL REGION

Indian Lands	Pre-Workings				Second Working				Other Workings			
	Acres Without Ribes	Acres With Ribes	Total Acres	Ribes Destroyed	Man- Days	Acres	Ribes Destroyed	Man- Days	Acres	Ribes Destroyed	Man- Days	
Grand Portage, Minnesota	=	408	408	349,181	986	=	=	=	50	19,046	103	
Red Lake, Minnesota	=	168	168	1,930	53	=	=	=	7,024	225,792	2,363	
White Earth, Minnesota	=	=	=	=	=	435	105,529	329	435	31,541	285	
Leech Lake, Minnesota	=	=	=	=	=	2,011	27,045	174	412	64,874	215	
Red River, Wisconsin	=	3,556	3,556	136,153	215	646	8,410	174	1,613	291,067	1,150	
Lac Court Oreilles, Wisconsin	=	3,190	3,190	247,822	1,595	458	43,210	315	=	=	=	
Lac du Flambeau, Wisconsin	=	3,377	3,377	62,051	505	39	715	3	=	=	=	
Manominee, Wisconsin	=	570	570	11,157	241	1,275	43,101	1,241	1,200	18,209	635	
TOTAL		11,056	11,056	908,139	3,580	1,261	150,090	5,440	11,787	380,592	1,703	

TABLE 1 - SHEET 8

## SUMMARY OF RIBES ERADICATION BY INDIAN SERVICE - 1947

## NORTH CENTRAL REGION

Indian Lands	All Work			Per Acre		Number of Camps	Total Seasonal Employees
	Acres Without Ribes	Acres With Ribes	Total Acres	Ribes Destroyed	Man- Days	Days	
Grand Portage, Minnesota	-	458	458	368,227	1,089	2.38	23
Red Lake, Minnesota	-	7,192	7,192	227,722	2,416	0.34	47
White Earth, Minnesota	-	863	863	137,073	614	0.71	15
Leech Lake, Minnesota	-	2,423	2,423	91,919	419	0.17	15
Mad River, Wisconsin	-	5,815	5,815	436,252	1,539	0.26	26
Lac Court Oreilles, Wisconsin	-	3,648	3,648	291,032	1,910	0.52	20
Lac du Flambeau, Wisconsin	-	3,416	3,416	62,752	508	0.15	8
Menomonie, Wisconsin	-	3,045	3,045	78,847	2,160	0.72	42
	-	30,360	30,360	1,697,924	10,695	0.40	106

Use Peak Season Employment.



TABLE 2 - SHEET 1

## ACREAGE WORKED ON NATIONAL FOREST LANDS - 1947

National Forests	NORTH CENTRAL REGION					Second Working Acres	Other Working Acres	All Working Acres
	Acres National Forest	Acres State Forest	Acres Private Forest	Acres Total	Acres Total			
Buckeye, Indiana	179	-	-	179	-	-	-	179
Wayne, Ohio	2,154	-	-	2,154	-	-	-	2,154
Lincoln, Michigan	-	-	-	-	70	-	-	70
Manistee, Michigan	-	-	600	600	2,749	2,573	5,122	5,122
McQuayville, Michigan	-	-	500	500	160	-	1,240	1,240
St Ignace, Michigan	-	-	4,495	4,495	640	-	5,135	5,135
Ottawa, Michigan	-	-	1,600	1,600	1,325	1,275	6,145	6,145
Superior, Minnesota	-	-	1,540	1,540	122	1,330	3,000	3,000
Calongoma, Minnesota	-	-	177	177	247	224	2,100	2,100
Chippewa, Minnesota	-	-	446	446	4,545	-	5,400	5,400
Missoula, Minnesota	-	-	500	500	181	319	2,100	2,100
<b>Total</b>	<b>2,333</b>	<b>0</b>	<b>11,140</b>	<b>13,473</b>	<b>11,042</b>	<b>6,546</b>	<b>27,061</b>	<b>27,061</b>

## ACREAGE WORKED ON INDIAN LANDS - 1947

## NORTH CENTRAL REGION

Indian Lands	First Working			Second Working Acres	Other Working Acres	All Working Acres
	Acres Without Ribles	Acres With Ribles	Total Acres			
Grand Portage, Minnesota	-	408	408	-	50	458
Red Lake, Minnesota	-	168	168	-	7,024	7,192
White Earth, Minnesota	-	-	-	435	428	863
Leech Lake, Minnesota	-	-	-	2,011	412	2,423
Bad River, Wisconsin	-	3,556	3,556	646	1,613	5,172
Lac Court Oreilles, Wisconsin	-	3,190	3,190	458	-	3,648
Lac du Flambeau, Wisconsin	-	3,377	3,377	39	-	3,416
Menominee, Wisconsin	-	570	570	1,275	1,200	3,045
Total	-	11,869	11,869	4,864	10,787	26,860

Calendar Year Series

TABLE 2 - SHEET 4

## ACREAGE WORKED ON STATE AND PRIVATE LANDS - 1947

## NORTH CENTRAL REGION

## State &amp; Private Lands

Illinois	20	182	202	-	30	232
Indiana	2,024	1,720	3,744	2,888	870	7,502
Iowa	-	323	323	587	133	1,043
Ohio	-	3,494	3,494	5,398	789	9,681
Michigan	-	6,593	6,593	22,389	8,631	37,613
Minnesota	-	1,377	1,377	2,201	-	3,578
Wisconsin	-	49,157	49,157	10,078	3,093	62,328
<b>Total</b>	<b>2,044</b>	<b>22,846</b>	<b>24,890</b>	<b>43,541</b>	<b>13,546</b>	<b>121,977</b>



TABLE 2 - SHEET 5

ACREAGE WORKED BY LAND OWNERSHIP - 1947

NORTH CENTRAL REGION

Land Ownership	First Working			Second Working Acres	Other Working Acres	All Working Acres
	Acres Without Ribes	Acres With Ribes	Total Acres			
National Forest	2,333	10,143	12,476	11,262	6,546	30,360
Indian	-	11,269	11,269	4,864	10,727	26,860
<del>Forest - Interior</del>	-	11,269	11,269	4,864	10,727	26,860
Total - Federal	2,333	21,412	23,745	16,126	17,273	57,824
State and Private	2,014	62,846	64,860	43,541	13,546	121,977
Grand Total	4,347	84,258	88,605	59,667	30,819	179,901

TABLE 2 - SHEET 6

ACREAGE WORKED ON INTERMINGLED LANDS - 1947

NORTH CENTRAL REGION

Intermingled Lands

Michigan	-	3,569	3,569	10,028	2,420	16,017
Minnesota	-	558	558	-	-	558
Wisconsin	-	-	-	3,241	-	3,241
<del>Total</del>	-	4,127	4,127	13,269	2,420	19,816
Est. Ribes Pulled*		116,623	116,623	183,566	20,744	350,933
Est. Man-Days Used		302	302	1,688	215	2,805

\* Estimated to be based on percentage of total ribes-bearing acreage charged to intermingled lands

TABLE 3

SUMMARY OF FIELD WORK OTHER THAN RIBTS ERADICATION BY STATES AND OPERATING AGENCIES - 1947



TABLE A  
Accumulative Series - NET

STATUS OF RIBES ERADICATION BY STATES - ALL OWNERSHIPS, DECEMBER 31, 1947

NORTH CENTRAL REGION

State	Total Acres		Control Area (Wh. P. & Prot. Zone)		First Working		Second Working		Other Workings		On Maintenance		Remaining Work	
	White Pine				Acres	Per- cent	Acres	Per- cent	Acres	Per- cent	Acres	cent	Unworked Acres	Requiring Rework Acres (Col. 4 & 5)
Illinois	1,923		13,386		11,157	83.3	10,183		12,622		2,337	17.5	2,229	8,820
Indiana	8,567		188,596		77,608	41.2	19,092		5,845		51,855	27.5	110,988	25,753
Iowa	5,845		50,001		34,053	68.1	7,039		1,208		18,793	37.6	15,948	15,255
Ohio	20,230		470,699		183,970	39.1	43,311		14,123		76,900	16.3	286,729	107,070
Michigan	402,760		1,211,025		1,078,308	89.0	408,704		74,057		399,644	33.0	132,717	678,664
Minnesota	266,553		590,866		373,220	63.2	114,201		27,728		94,482	16.0	217,646	278,738
Wisconsin	429,815		1,438,121		1,136,991	79.1	384,282		30,401		376,701	26.2	301,130	760,290
<b>Total</b>	<b>1,135,699</b>		<b>3,962,694</b>		<b>2,895,397</b>	<b>73.1</b>	<b>985,812</b>		<b>165,964</b>		<b>1,067,717</b>	<b>25.8</b>	<b>1,067,327</b>	<b>1,874,590</b>

TABLE B - SHEET 1  
Accumulative Series - NET

STATUS OF RIBES ERADICATION ON NATIONAL FOREST LANDS, DECEMBER 31, 1947

NORTH CENTRAL REGION

National Forests	Total Acres		Control Area (Wh. P. & Prot. Zone)		First Working		Second Working		Other Workings		On Maintenance		Remaining Work	
	White Pine				Acres	Per- cent	Acres	Per- cent	Acres	Per- cent	Acres	cent	Unworked Acres	Requiring Rework Acres (Col. 4 & 5)
Hosier, Indiana	18		179		179	100.0	0		0		179	100.0	0	0
Kayne, Ohio	520		4,341		4,029	92.8	0		0		4,029	92.8	312	0
Auron, Mich.	1,263		5,038		5,008	99.4	1,628		128		5,601	71.5	30	1,407
Benetree, Mich.	22,123		68,834		67,544	98.1	13,713		4,904		62,749	91.2	1,290	4,795
Boquetts, Mich.	10,787		25,155		24,470	97.3	11,745		1,150		11,070	43.8	685	13,440
Brantley, Mich.	11,271		31,977		30,277	94.7	13,596		2,270		13,455	42.1	1,700	16,822
Ottawa, Mich.	11,575		21,988		20,478	93.1	17,167		5,459		6,600	30.0	1,510	13,878
Superior, Minn.	82,542		131,790		35,857	27.2	15,298		7,942		2,198	1.7	95,933	35,659
Chippewa, Minn.	12,835		26,124		21,412	82.0	9,805		2,135		15,255	58.4	4,712	8,457
Chippewa, Wis.	16,768		41,370		39,000	94.5	22,441		2,119		11,795	28.5	2,570	27,205
Mequon, Wis.	12,286		24,159		23,344	96.6	10,551		1,660		9,040	37.4	815	14,301
<b>Total</b>	<b>10,904</b>		<b>300,975</b>		<b>279,796</b>	<b>73.3</b>	<b>105,744</b>		<b>27,667</b>		<b>139,794</b>	<b>36.1</b>	<b>109,757</b>	<b>131,667</b>

TABLE B - SHEET 2

## STATUS OF RIBES ERADICATION ON NATIONAL PARK LANDS, DECEMBER 31, 1947

National Park Lands	Total Acres		NORTH CENTRAL REGION				Remaining Work	
	White Pine	Control Area (Wh. P. & Prot. Zone)	First Working		Second Working		On Maintenance	
			Acres	Per- cent	Acres	Other Workings Acres	Acres	Per- cent
Jale Royale, Mich.	25	120	120	100.0	-	-	Unworked Acres	Requiring Rework Acres(Col. 4 & 5)

TABLE B - SHEET 3

## STATUS OF RIBES ERADICATION ON INDIAN LANDS, DECEMBER 31, 1947

Indian Lands	Total Acres		NORTH CENTRAL REGION				Remaining Work	
	White Pine	Control Area (Wh. P. & Prot. Zone)	First Working		Second Working		On Maintenance	
			Acres	Per- cent	Acres	Other Workings Acres	Acres	Per- cent
Sac-Fox, Iowa	45	500	500	100.0	206	-	-	0.0
Grand Portage, Minn.	974	1,271	1,271	100.0	316	50	-	0.0
Leech Lake, Minn.	2,432	3,387	3,387	100.0	3,012	502	2,755	81.3
Nett Lake, Minn.	5,252	7,136	7,093	99.4	3,377	107	5,010	70.2
Red Lake, Minn.	12,473	19,622	19,622	100.0	14,752	9,962	9,247	47.1
Vermilion, Minn.	78	186	186	100.0	206	372	-	0.0
White Earth, Minn.	481	1,063	1,063	100.0	807	433	545	51.3
Sad River, Wis.	6,833	13,474	12,777	94.8	5,677	3,451	6,607	49.0
LacCourtOreilles, Wis.	7,930	16,859	15,065	89.4	5,535	1,120	4,540	26.9
LacduFlambeau, Wis.	7,513	14,249	12,691	89.1	6,032	-	9,576	67.2
Menominee, Wis.	17,813	32,277	26,514	82.1	17,362	3,056	6,635	20.6
<b>Total</b>	<b>61,024</b>	<b>110,024</b>	<b>100,169</b>	<b>91.0</b>	<b>57,282</b>	<b>19,053</b>	<b>44,915</b>	<b>40.4</b>
							<b>9,255</b>	<b>53.25</b>

Accumulative Series - NFI



TABLE B - SHEET 4

STATUS OF RIBES ERADICATION ON STATE AND PRIVATE LANDS, DECEMBER 31, 1947

NORTH CENTRAL REGION

State & Private Lands	Total Acres		First Working		Second Working		Other Workings		On Maintenance		Remaining Work	
	White Pine	Zone)	Acres	cent	Acres	cent	Acres	Acres	Acres	cent	Unworked Acres	Requiring Rework Acres (Col 4-B)
Illinois	1,923	13,386	11,157	83.3	10,183	12,622	2,337	17.5	2,229	8,820	2,229	8,820
Indiana	8,549	188,417	77,429	41.1	19,092	5,845	51,676	27.4	110,987	25,753	110,987	25,753
Iowa	5,800	49,501	33,553	67.8	6,833	1,208	18,798	3.0	15,248	14,755	15,248	14,755
Ohio	19,710	466,358	179,941	38.6	43,311	44,123	72,871	15.6	286,417	107,070	286,417	107,070
Michigan	345,726	1,057,913	930,411	87.9	350,855	60,246	302,209	28.6	127,502	628,202	127,502	628,202
Minnesota	149,486	400,287	283,329	70.8	66,628	6,225	59,472	14.9	116,958	223,857	116,958	223,857
Wisconsin	360,672	1,295,733	1,007,600	77.8	308,884	18,995	328,508	25.4	288,133	679,092	288,133	679,092
Total	891,866	3,471,595	2,527,120	72.7	805,785	119,264	835,871	24.1	948,175	1,687,549	948,175	1,687,549

TABLE B - SHEET 5

SUMMARY OF STATUS OF RIBES ERADICATION BY LAND OWNERSHIP, DECEMBER 31, 1947

NORTH CENTRAL REGION

Land Ownership

National Forests	181,988	380,955	271,596	71.3	123,744	27,667	139,931	36.7	109,357	131,667	109,357	131,667
National Parks	15	120	120	100.0	-	-	-	-	-	120	-	120
Indian Lands	61,824	110,024	100,169	91.0	57,282	19,053	44,915	40.8	9,855	55,254	9,855	55,254
Total - Federal Lands	243,827	491,109	371,895	75.7	181,026	46,720	184,846	37.6	119,212	187,041	119,212	187,041
State & Private Lands	891,866	3,471,595	2,527,120	72.7	805,785	119,264	835,871	24.1	948,175	1,687,549	948,175	1,687,549
Total	1,135,693	5,362,704	4,249,015	79.1	986,811	165,984	1,020,717	25.8	1,067,387	1,874,590	1,067,387	1,874,590

TABLE B - SHEET 6

Accumulative Series - 1947

STATUS OF RIBPS ERADICATION ON INTERMINGLED LANDS, DECEMBER 31, 1947

Intermingled Lands	NORTH CENTRAL REGION									
	Total Acres		First		Second		Other		On	
	Intermingled Lands		Working		Working		Workings		Maintenance	
	Control White Pine	Area Prot. Zone	Acres	Per- cent	Acres	Per- cent	Acres	Per- cent	Acres	Per- cent
Michigan	48,017	136,442	124,298	91.1	46,515	7,578	39,322	28.8	12,144	84,976
Minnesota	25,000	70,991	36,575	51.5	1,960	-	2,630	3.7	34,416	33,945
Wisconsin	8,096	24,288	21,374	88.0	18,917	367	7,302	30.1	2,944	14,072
T o t a l	81,113	231,721	182,247	78.6	67,392	1,945	49,254	21.3	49,474	132,993



TABLE C - SHEET 1

SUMMARY OF RIBES ERADICATION BY STATES AND OPERATING AGENCIES 1918 - 1947

NORTH CENTRAL REGION

State	Operating Agency	F I R S T   W O R K I N G				S E C O N D   W O R K I N G			
		Acres		Total Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days
		Without Ribes	With Ribes						
Illinois	Bureau-State	2,680	17,242	19,922	1,499,380	3,870	10,183	610,042	2,512
Indiana	Bureau-State	38,937	48,496	87,433	436,534	3,903	19,092	92,179	1,035
Iowa	Bureau-State	-	38,224	38,224	3,515,071	26,845	6,833	637,820	4,933
	Indian Service	-	500	500	13,462	169	206	3,592	57
	Total	-	38,724	39,124	3,528,533	27,014	7,039	641,412	4,990
Ohio	Bureau-State	49,354	194,980	244,334	2,541,454	32,824	43,311	719,689	12,311
Michigan	Bureau-State	-	1,213,314	1,213,314	60,137,529	251,893	355,277	7,085,774	44,104
	Forest Service	-	93,543	93,543	5,110,917	27,039	53,427	998,659	9,826
	Total	-	1,306,857	1,306,857	65,248,446	278,932	408,704	8,084,433	53,930
Minnesota	Bureau-State	-	323,233	323,233	44,436,792	110,358	72,100	3,984,294	19,893
	Forest Service	-	63,498	63,498	6,897,777	33,807	20,263	1,322,774	10,098
	Indian Service	-	31,220	31,220	10,245,124	19,223	21,828	2,299,026	10,189
	Total	-	417,951	417,951	61,629,693	163,388	114,201	7,606,094	40,180
Wisconsin	Bureau-State	-	1,102,636	1,102,636	62,047,578	268,068	321,719	4,984,389	43,331
	Forest Service	-	51,551	51,551	4,465,028	28,352	27,957	692,094	7,835
	Indian Service	-	75,511	75,511	20,500,927	66,014	34,606	3,064,186	20,507
	Total	-	1,229,698	1,229,698	87,013,533	362,434	384,282	8,740,669	71,673
All States	Bureau-State	90,971	2,898,125	2,989,096	174,664,338	697,761	828,515	18,114,187	128,119
	Forest Service	-	208,592	208,592	16,473,722	89,198	101,647	3,013,527	27,759
	Indian Service	-	107,231	107,231	30,759,513	85,406	56,650	5,366,804	30,553
Grand Total		90,971	3,213,948	3,204,919	221,897,573	872,365	986,812	26,494,518	186,431



TABLE C - SHEET 2

## SUMMARY OF RIBES ERADICATION BY STATES AND OPERATING AGENCIES 1918 - 1947

NORTH CENTRAL REGION												
State	Operating Agency	Other Workings				All Workings				Per Acre		
		Acres	Ribes Destroyed	Man-Days	Acres Without Ribes	Acres With Ribes	Total Acres	Ribes Destroyed	Man-Days	Ribes	Days	Day
Illinois	Bureau-State	12,822	533,926	3,509	2,680	40,047	42,727	2,643,418	9,891	66.0	0.2	
Indiana	Bureau-State	5,015	24,711	202	38,937	73,433	112,370	553,454	5,200	7.5	0.0	
Iowa	Bureau-State	1,208	110,087	1,068	-	46,265	46,265	4,262,978	32,846	92.1	0.7	
	Indian Service	-	-	-	-	706	706	17,054	226	24.2	0.32	
	Total	1,800	110,087	1,068	-	46,971	46,971	4,280,032	33,072	91.1	0.73	
Ohio	Bureau-State	14,183	169,930	2,413	49,354	212,114	261,768	3,431,073	47,518	16.2	0.2	
Michigan	Bureau-State	61,424	920,493	7,264	-	1,630,015	1,630,015	68,143,796	303,261	41.8	0.19	
	Forest Service	12,633	109,935	1,970	-	159,603	159,603	6,219,511	38,835	39.0	0.24	
	Total	74,057	1,030,428	9,234	-	1,789,618	1,789,618	74,363,307	342,096	41.6	0.19	
Minnesota	Bureau-State	7,244	378,620	2,515	-	402,577	402,577	48,849,706	132,766	121.3	0.33	
	Forest Service	9,058	293,804	2,840	-	92,819	92,819	8,514,355	46,745	91.7	0.50	
	Indian Service	11,426	640,463	5,092	-	64,484	64,484	13,184,613	34,504	204.5	0.54	
	Total	27,728	1,312,887	10,447	-	559,880	559,880	70,548,674	214,015	126.0	0.38	
Wisconsin	Bureau-State	18,995	237,721	2,298	-	1,443,350	1,443,350	67,269,688	313,697	46.6	0.22	
	Forest Service	3,779	68,798	1,543	-	83,287	83,287	5,225,920	37,730	62.7	0.45	
	Indian Service	7,627	586,195	4,011	-	117,744	117,744	24,151,308	90,332	205.1	0.77	
	Total	30,401	892,714	7,852	-	1,644,381	1,644,381	96,646,916	141,759	58.8	0.27	
All States	Bureau-State	121,461	2,375,588	19,329	90,971	3,848,101	3,939,072	195,154,113	845,209	50.7	0.22	
	Forest Service	25,470	472,537	6,353	-	335,709	335,709	19,959,786	123,310	59.5	0.31	
	Indian Service	19,053	1,226,658	9,103	-	182,934	182,934	37,352,975	125,062	204.2	0.68	
	Total	165,984	4,074,783	34,785	90,971	4,366,744	4,457,715	252,466,874	1,093,581	57.8	0.29	



TABLE C - SHEET 3  
CUMULATIVE SUMMARY OF RIBES ERADICATION BY FOREST SERVICE 1918 - 1947

National Forests	NORTH CENTRAL REGION											
	First Working				Second Working				Third and After Working			
	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days
Baron, Mich.	4,136	64,475	501	1,228	26,333	147	128	464	5	5,492	91,272	653
Benzie, Mich.	13,316	125,872	728	12,482	10,100	139	3,931	5,635	64	29,729	141,607	934
Marquette, Mich.	23,232	644,924	6,215	11,745	116,719	2,303	1,150	3,671	110	36,127	755,344	8,626
Blawatka, Mich.	26,146	447,690	4,664	13,596	105,300	1,559	2,270	11,137	223	42,012	564,127	6,446
Ontonagon, Mich.	26,713	3,827,956	14,931	14,376	740,207	5,678	5,154	89,028	1,568	46,243	4,657,191	22,177
Temperley, Minn.	36,105	4,611,900	21,975	14,457	1,113,066	8,152	7,942	250,696	2,588	58,504	5,915,670	32,719
Chippewa, Minn.	27,395	2,285,869	11,832	5,805	209,708	1,246	1,116	43,100	252	34,315	2,538,685	14,030
Congaregon, Wis.	28,787	2,393,978	15,393	12,634	411,444	4,346	2,119	33,816	824	43,540	2,839,238	20,563
Iscolt, Wis.	22,764	2,071,050	12,959	15,323	280,650	3,489	1,650	4,982	719	39,747	2,805,632	17,166
<b>Total</b>	<b>316,592</b>	<b>16,473,722</b>	<b>85,198</b>	<b>101,607</b>	<b>3,015,527</b>	<b>57,793</b>	<b>29,670</b>	<b>674,507</b>	<b>6,993</b>	<b>335,709</b>	<b>15,952,706</b>	<b>124,500</b>

CUMULATIVE SUMMARY OF RIBES ERADICATION BY INDIAN SERVICE, 1918 - 1947

NORTH CENTRAL REGION												
Indian Lands	First Working			Second Working			Third and Other Working					
	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days	All Working Acres      Ribes Destroyed      Man-Days		
Sac-Fox, Iowa	500	13,462	169	206	3,592	57	-	-	-	706	17,054	226
Grand Portage, Minn.	1,620	2,367,154	4,525	316	154,501	395	50	19,046	103	1,986	2,540,701	5,023
Leech Lake, Minn.	1,648	326,352	732	2,380	153,271	620	502	90,689	376	4,530	570,312	1,728
Nett Lake, Minn.	7,126	527,722	1,841	3,377	303,350	2,287	107	21,280	340	10,610	852,352	4,468
Red Lake, Minn.	20,168	6,740,408	11,216	14,752	1,521,399	6,151	9,962	423,490	3,510	44,882	8,685,297	20,877
Vermilion, Minn.	286	137,530	424	206	29,912	210	372	40,252	418	864	207,694	1,052
White Earth, Minn.	372	145,958	485	807	136,593	526	433	45,706	345	1,612	328,257	1,356
Bad River, Wis.	13,231	8,205,163	18,770	5,677	1,122,112	4,471	3,451	453,755	1,852	22,359	9,781,030	25,093
LacCourtOreilles, Wis.	15,554	1,382,410	10,282	5,535	202,104	1,754	1,120	5,505	216	22,209	1,590,019	12,252
Lac du Flambeau, Wis.	12,859	683,379	3,599	6,032	46,443	370	-	-	-	18,891	729,822	3,969
Menominee, Wis.	33,867	10,229,975	33,363	17,362	1,693,527	13,712	3,056	126,935	1,943	54,285	12,050,437	49,018
TOTAL	107,833	30,759,513	65,406	56,650	5,366,804	30,552	19,053	1,226,658	9,103	182,934	37,352,975	125,062



TABLE D - SHEET 1

## CUMULATIVE SUMMARY OF GROSS ACREAGE WORKED BY LAND OWNERSHIPS 1928 - 1947

National Forests	NORTH CENTRAL REGION					Second Working Acres	Other Working Acres	All Working Acres
	First Working			Total Acres				
	Acres Without Ribes	Acres With Ribes						
Shawnee, Illinois	50	=		50	=	-	-	50
Hoosier, Indiana	179	=		179	=	-	-	179
Wayne, Ohio	2,758	1,271		4,029	=	-	-	4,029
Buron, Michigan	-	6,361		6,361	1,628	128		8,117
Antietam, Michigan	-	66,932		66,932	13,713	4,804		85,449
Barquette, Michigan	-	26,757		26,757	11,745	1,150		39,652
Elmzetha, Michigan	-	29,911		29,911	13,596	2,270		45,777
Orchard, Michigan	-	28,170		28,170	17,167	5,459		50,796
Superior, Minnesota	-	41,771		41,771	15,298	7,942		65,011
Chippewa, Minnesota	-	36,723		36,723	9,805	2,135		48,663
Chippewagon, Wisconsin	-	39,110		39,110	22,441	2,119		63,670
Wiscasset, Wisconsin	-	20,888		20,888	18,351	1,666		40,905
Total	2,987	305,594		308,581	123,764	27,657		460,996

TABLE D - SHEET 2

CUMULATIVE SUMMARY OF GROSS ACREAGE WORKED BY LAND OWNERSHIPS 1918 - 1947

National Park Lands	NORTH CENTRAL REGION				
	First Working				All Workings Acres
	Acres Without Ribes	Acres With Ribes	Total Acres	Second Working Acres	
Isle Royale, Michigan	-	120	120	-	120

TABLE D - SHEET 3

CUMULATIVE SUMMARY OF GROSS ACREAGE WORKED BY LAND OWNERSHIP 1918 - 1947

Indian Lands	NORTH CENTRAL REGION				
	First Working				All Workings Acres
	Acres Without Ribes	Acres With Ribes	Total Acres	Second Working Acres	
Sao-Fox, Iowa	-	500	500	206	706
Grand Portage, Minnesota	-	1,620	1,620	316	1,986
Leech Lake, Minnesota	-	3,323	3,323	3,012	6,837
Nett Lake, Minnesota	-	7,126	7,126	3,377	10,610
Red Lake, Minnesota	-	20,168	20,168	14,752	44,882
Vermilion, Minnesota	-	286	286	206	864
White Earth, Minnesota	-	1,354	1,354	807	2,594
Bad River, Wisconsin	-	13,231	13,231	5,677	22,359
Lac Court Oreilles, Wisconsin	-	15,554	15,554	5,535	22,209
Lac du Flambeau, Wisconsin	-	12,859	12,859	6,032	18,891
Mencaminée, Wisconsin	-	33,867	33,867	17,362	54,285
Total	-	109,888	109,888	57,282	166,223



TABLE D - SHEET 4

CUMULATIVE SUMMARY OF GROSS ACREAGE WORKED BY LAND OWNERSHIP 1918 - 1947

State & Private Lands	NORTH CENTRAL REGION				
	First Working				
	Acres Without Ribes	Acres With Ribes	Total Acres	Second Working Acres	Other Workings Acres
Illinois	2,630	17,242	19,872	10,183	12,622
Indiana	38,758	48,496	87,254	19,092	5,845
Iowa	-	38,224	38,224	6,833	1,208
Ohio	46,596	153,709	200,305	43,311	14,123
Michigan	-	1,148,606	1,148,606	350,855	60,246
Minnesota	-	305,580	305,580	66,628	6,225
Wisconsin	-	1,086,189	1,086,189	308,884	18,995
<b>Total</b>	<b>87,384</b>	<b>2,790,046</b>	<b>2,886,030</b>	<b>805,756</b>	<b>119,864</b>
					<b>3,811,080</b>

TABLE D - SHEET 5

ACREAGE WORKED BY LAND OWNERSHIP - 1947

Land Ownership	NORTH CENTRAL REGION				
	First Working				
	Acres Without Ribes	Acres With Ribes	Total Acres	Second Working Acres	Other Workings Acres
National Forest	2,937	305,854	308,891	123,744	27,657
National Park	-	120	120	-	-
Indian	-	109,888	109,888	57,282	19,053
<b>Total - Interior</b>	<b>-</b>	<b>110,008</b>	<b>110,008</b>	<b>57,282</b>	<b>19,053</b>
<b>Total - Federal</b>	<b>2,937</b>	<b>415,902</b>	<b>418,839</b>	<b>181,206</b>	<b>46,720</b>
<b>Total - Private</b>	<b>87,384</b>	<b>2,790,046</b>	<b>2,886,030</b>	<b>805,756</b>	<b>119,864</b>
<b>Grand Total</b>	<b>90,321</b>	<b>3,215,948</b>	<b>3,306,269</b>	<b>986,962</b>	<b>165,904</b>
					<b>4,457,715</b>

TABLE 3

SUMMARY OF ALL WORK EXCEPT RIBES ERADICATION BY STATES AND OPERATING AGENCIES, 1918 - 1947

NORTH CENTRAL REGION											
State	Operating Agency	Ribes Nigrum		Nursery			Sanitation			Treatment	
		Bushes Destroyed	Man-Days	Number Initially Protected	Acres Worked	Ribes Destroyed	Man-Days	Number Still Active	Number Treated	Man-Days	
Illinois	Bureau-State	761	=	6	2,520	50,378	378	5	=	=	
Indiana	Bureau-State	15	=	6	3,750	11,351	60	2	=	=	
Iowa	Bureau-State	7,204	6,525	9	3,436	67,106	824	7	2	=	
Ohio	Bureau-State	73,117	25,791	13	6,131	59,594	1,890	4	193	37	
Michigan	Bureau-State	147,185	40,092	8	2,734	284,850	6,149	6	144	15	
	Forest Service	=	=	5	1,952	828,017	10,173	1	41,476	3,209	
	Total	147,185	10,092	13	4,686	1,112,867	16,322	7	41,476	3,209	
Minnesota	Bureau-State	23,309	12,001	17	5,804	1,325,183	5,017	6	25,679	1,369	
Wisconsin	Bureau-State	37,051	32,137	13	3,611	557,765	4,413	9	=	=	
	Forest Service	=	=	3	1,154	128,753	3,655	1	=	=	
	Indian Service	=	=	1	220	200,660	337	0	=	=	
	Total	37,051	32,137	17	4,985	887,178	8,405	10	=	=	
All States	Bureau-State	288,642	116,546	74	27,986	2,356,227	18,731	39	67,694	4,630	
	Forest Service	=	=	8	3,106	956,770	13,828	2	=	=	
	Indian Service	=	=	1	220	200,660	337	=	=	=	
Grand Total		288,642	116,546	83	31,312	3,513,657	32,896	41	67,694	4,630	



TABLE G

## SUMMARY OF ALL RIBES ERADICATION BY STATES, OPERATING AGENCIES AND PROGRAMS 1918 - 1947

State	Operating Agency	Regular and Cooperative				All Emergency Programs				All Programs			
		Ribes		Man-		Ribes		Man-		Ribes		Man-	
		Acres	Destroyed	Days		Acres	Destroyed	Days		Acres	Destroyed	Days	
Illinois	Bureau-State	25,793	740,605	3,482		16,929	1,902,733	6,409		42,727	2,643,418	9,891	
Indiana	Bureau-State	52,731	153,423	778		59,636	420,026	4,422		112,370	553,454	5,209	
Iowa	Bureau-State	9,202	859,279	7,729		37,063	3,403,699	25,117		46,265	4,282,978	32,847	
	Indian Service	500	14,074	168		206	2,980	58		706	17,054	226	
Total		9,702	873,353	7,957		37,269	3,406,679	25,175		46,971	4,280,032	33,072	
Ohio	Bureau-State	54,031	445,980	5,676		207,737	3,285,093	44,872		251,766	3,431,073	47,548	
Michigan	Bureau-State	374,622	5,541,687	30,904		1,255,393	62,602,109	272,357		1,630,015	68,143,796	303,267	
	Forest Service	62,371	1,011,669	10,092		97,232	5,207,842	28,743		159,603	6,219,511	38,837	
Total		436,993	6,553,356	40,996		1,352,625	67,809,951	301,100		1,789,618	74,363,307	342,104	
Minnesota	Bureau-State	27,048	1,362,724	12,063		375,529	47,486,982	120,703		402,577	48,849,706	132,766	
	Forest Service	30,701	2,023,687	16,696		62,118	6,490,668	30,049		92,819	8,514,355	46,745	
	Indian Service	17,906	2,888,052	11,782		46,578	10,296,561	22,722		64,484	13,184,613	34,501	
Total		75,655	6,274,463	40,541		484,225	64,274,211	173,474		559,880	70,548,671	214,012	
Wisconsin	Bureau-State	501,557	8,159,494	41,171		941,793	59,110,194	272,526		1,443,350	67,269,688	313,697	
	Forest Service	27,275	587,469	8,015		56,012	4,638,451	29,715		83,287	5,225,920	37,739	
	Indian Service	44,990	3,295,774	23,034		72,754	20,855,534	67,298		117,744	24,151,308	90,332	
Total		573,822	12,042,737	72,220		1,070,559	84,604,179	369,539		1,641,381	96,646,916	441,768	
All States	Bureau-State	1,044,992	16,943,277	101,803		2,894,080	178,210,836	743,406		3,939,072	195,154,113	845,207	
	Forest Service	120,347	3,622,825	34,803		215,362	16,336,961	88,507		335,709	19,959,786	123,310	
	Indian Service	63,396	6,197,900	34,984		119,538	31,155,075	90,078		182,934	37,352,975	125,688	
Total		1,228,735	26,764,002	171,590		3,228,980	225,702,872	921,991		4,457,715	252,466,874	1,094,205	









